NATIONAL ENERGY EFFICIENCY AND CONSERVATION PLAN AND ROADMAP 2023-2050

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DEPARTMENT OF ENERGY
ENERGY UTILIZATION MANAGEMENT BUREAU

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TABLE OF CONTENTS

Abbreviations

AFETD	Alternative Fuels and Energy Technology Division
AFF	Alternative Fuels Fund
BAU	Business as Usual
BEEC	Building Energy Efficiency Code
BEEI	Building Energy Efficiency Index
BOI	Board of Investments
CCC	Climate Change Commission
CECO	Certified Energy Conservation Officers
CEM	Certified Energy Managers
CES	Clean Energy Scenario
CHED	Commission on Higher Education
DAP	Development Academy of the Philippines
DBM	Department of Budget and Management
DBP	Development Bank of Philippines
DC	Department Circular
DE	Designated Establishment
DENR	Department of Environment and Natural Resources
DILG	Department of the Interior and Local Government
DO	Department Order
DOE	Department of Energy
DOF	Department of Finance
DOST	Department of Science and Technology
DOTr	Department of Transport
DPWH	Department of Public Works and Highways
DSM	Demand-Side Management
DTI	Department of Trade and Industry
DU	Distribution Utilities
EA	Energy Auditors
EC	Electric Cooperatives
EEE	Electrical and Electronic Equipment
ELI	Efficient Lighting Initiative
EPIMB	Electric Power Industry Management Bureau
EPMPD	Energy Efficiency and Conservation Programs Management and Technology Promotion Division
EPPB	Energy Policy and Planning Bureau
EPRED	Energy Efficiency and Conservation Performance Regulation and Enforcement Division
EPSMD	Energy Efficiency and Conservation Public Sector Management Division
ERC	Energy Regulatory Commission
ERDB	Energy Resources Development Bureau
ESCO	Energy Service Company
EU-ASEP	EU-Philippines Access to Sustainable Energy Programs
EUMB	Energy Utilization Management Bureau
EV	Electric Vehicle
EVCS	Electric Vehicle and Charging Stations
FECRT	Fuel Conservation and Efficiency in Road Transport
FI	Financial Institution
GAD	Gender and Development
GBR	Green Building Rating
GDP	Gross Domestic Product
GEEP	Government Energy Efficiency Projects

GEMP	Government Energy Management Programs
GHG	Greenhouse Gas
GOCC	Government Owned and Controlled Corporation
IAEECC	Inter-Agency Energy Efficiency and Conservation Committee
IC	Insurance Commission
IEA	International Energy Agency
IEC	Information and Education Campaign
IRR	Implementing Rules and Regulations
LBP	Landbank of Philippines
LCEP	Low Carbon Energy Programs
LEECP	Local Energy Efficiency and Conservation Plan
LGU	Local Government Unit
M&E	Monitoring and Evaluation
MC	Memorandum Circular
MEPP	Minimum Energy Performance for Products
MVE	Monitoring, Verification and Enforcement
NDC	Nationally Determined Contributions
NEA	National Electrification Administration
NEDA	National Economic and Development Authority
NEEC Office	National Energy Efficiency and Conservation Office
NEECD	National Energy Efficiency and Conservation Database
NEECO	National Energy Efficiency and Conservation Officer
NEECP	National Energy Efficiency and Conservation Plan
NGA	National Government Agency
NPC	National Power Corporation
NRLP	Nationwide Residential Lighting Programs
OIMB	Oil Industry Management Bureau
PCW	Philippine Commission on Women
PDU	Power Distribution Units
PEEP	Philippine Energy Efficiency Programs
PELP	Philippines Energy Labelling Programs
PEZA	Philippine Economic Zone Authority
PGBC	Philippine Green Building Council
PIA	Philippine Information Agency
PIEEP	Philippine Industrial Energy Efficiency Project
REMB	Renewable Energy Management
SME	Small, Medium Enterprise
SUCs	State Universities and Colleges
TFEC	Total Final Energy Consumption
UNIDO	United Nations Industrial Development Organization
WEEE	Waste Electrical and Electronic Equipment
WMCRDS	Waste Management Collection, Recycling and Disposal Strategy

Executive Summary

Background

The Philippines has witnessed a rise in energy consumption, driven by economic growth and a growing population in recent years. These trends are set to continue, with the transport and industrial sectors particularly driving the increase in energy demand. Although the Philippines continues to perform well compared to its ASEAN neighbors in terms of energy intensity (this has been attributed, at least in part to high, un-subsidized energy prices and a shift towards service and commercial industries), the rate of decline in energy intensity is slowing. Continued growth in GDP (it has been averaging 6-7% annually over the past decade, except for the year 2020 which saw negative GDP growth due to the COVID-19 pandemic) and the energy-intensive industrial, building/construction, and transport sectors will see an acceleration in energy demand in the Philippines. The growth in the industrial sector is expected to grow the fastest at an annual average of 5.9%, or a three-fold increase in energy use from 2018 to 2040. This is driven in part by further governmental programs aimed to boost developments in the manufacturing sector, and the 2018 'Build, Build, Build' initiative which will have a strong influence on further growth in the construction industry.[1]

Until 2019, energy efficiency activities had generally been voluntary, with few incentives to support widespread adoption. In early 2019, the long-awaited Energy Efficiency and Conservation Act (EEC Act) was enacted, putting in place the country's first law specifically relating to energy efficiency. The shift from voluntary to mandated activity, through the introduction of fines as well as incentives, is likely to have significant impact on energy efficiency action. This change also gives investors a clear indication of the government's commitment to scaling up energy efficiency across all sectors. While the passing of the EEC Act is a huge step forward for the Philippines Government and DOE, there is still much work to be done to implement its provisions. It is critical that comprehensive, clear, and appropriate strategies and plans are developed to accelerate implementation and build investor confidence in the energy efficiency market.

The National Energy Efficiency and Conservation Plan

The National Energy Efficiency and Conservation Plan (NEECP) is a comprehensive framework and plan that institutionalizes energy efficiency and conservation in the country across key sectors of the economy in accordance with the EEC Act. Section 4(z) of the EEC Act stipulates that the NEECP shall set out the governance structure, and programs for energy efficiency and conservation with defined national targets, feasible strategies, and regular monitoring and evaluation. The plan is also required to be regularly reviewed and revised by DOE. [2]

The Roadmap 2023-2050

The revised Philippine Energy Efficiency and Conservation Roadmap (2023-2050) (the Roadmap 2023-2050) provides an updated outline of the strategic plans and actions for EEC in the Philippines across all sectors, including implementing key provisions of the EEC Act, and its accompanying Implementing Rules and Regulations (EEC-IRR).

The Roadmap aligns with the NEECP as it provides for the key programs for energy efficiency and conservation by sector, for which emissions reduction targets and costings have been developed. Currently drafted and under review by the DOE, the NEECP Recommendations Report aligns with and builds on the draft Roadmap, additionally outlining the overarching structures and frameworks that enable the strategic actions of the Roadmap to be achieved. This Recommendation Report's structure complies with the Act's requirements for governance, programs, targets, and monitoring and evaluation while also attempting to establish a vision for the plan. Here is a discussion about them.

1 World Bank (2021) Data: GDP growth (annual %) – Philippines, available from https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2020&locations=PH&start=2011
2 Philippines Republic Act No. 11285 - An Act Institutionalizing Energy Efficiency and Conservation, Enhancing The Efficient Use Of Energy, And Granting Incentives To Energy Efficiency And Conservation Projects, page 7

Vision

To establish the implementation of the Energy Efficiency and Conservation Act and institutionalize energy efficiency and conservation as a national way of life geared towards the efficient and judicious utilization of energy across all sectors.

Objectives

The objectives of the NEECP are to:

- Provide a national framework to institutionalize the EEC Act.
- Define and outline all EEC programs to be implemented, their objectives and associated emission reduction targets over various time horizons.
- Provide a governance structure that brings together all key stakeholders and define their respective roles in fulfilling the provisions of EEC Act.
- Provide a Monitoring and Evaluation (M&E) framework against the strategic actions of the National EEC Roadmap 2023-2050 to track performance against pre-defined targets and provide a basis for learning and improvement.

Figure 1: Vision and Objectives statement and presentation for the NEECP

Governance

A governance structure is key on ensuring clear lines of cooperation and understanding of respective roles in the NEECP implementation. The DOE will coordinate with different government agencies [National Government Agencies (NGA), Government-Owned and Controlled Corporations (GOCC), and Local *Government Units (LGU)*], private organizations, and other stakeholders for the execution of the plan and program.

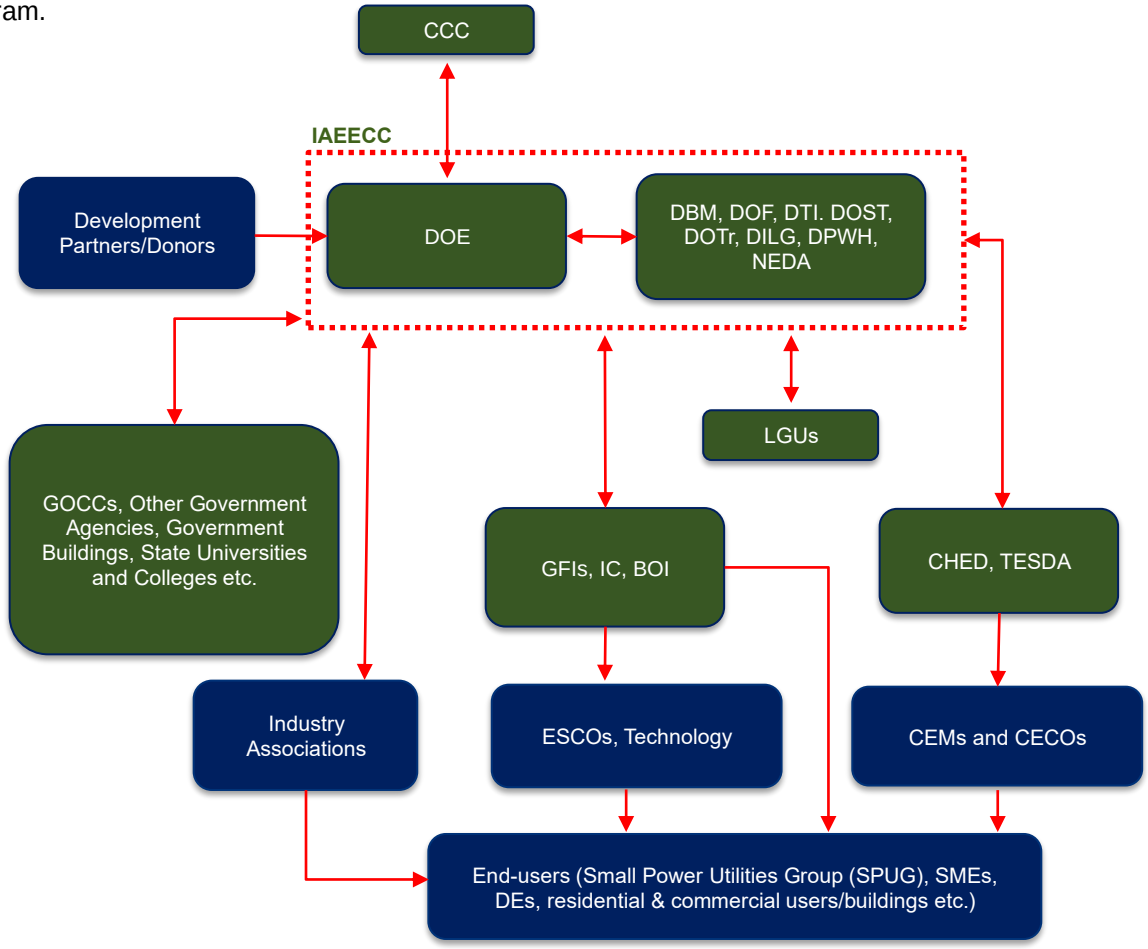


Figure 2: Governance Framework of the NEECP

Roles and Responsibilities

Department of Energy (DOE). The DOE shall be the lead agency in the implementation of the EEC Act and the EEC-IRR. It shall be responsible for the planning, formulation, development, implementation, enforcement, and monitoring of energy management policies and other related energy efficiency and conservation plans and programs.

Board of Investments (BOI). The BOI shall include energy efficiency projects, as defined in the Act and the EEC-IRR, in the annual investment priorities plan entitled to incentives provided under Executive Order No. 226, otherwise known as the Omnibus Investments Code of 1987 of the Philippines, as amended, and any other applicable laws within the period provided in the Act and the EEC-IRR. After the lapse of such period, BOI shall review the extension of inclusion of the energy efficiency projects in the investment priorities plan.

Commission on Higher Education (CHED). The CHED shall integrate into existing engineering curricula appropriate courses related to energy management. To ensure that energy management courses shall be offered in the appropriate engineering courses, the CHED shall prescribe these energy management courses as part of the relevant engineering courses' respective minimum curriculum through the appropriate CHED Memorandum Order. The CHED shall coordinate with the DOE in determining the appropriate courses in which the energy management courses shall be offered.

Climate Change Commission (CCC). The CCC shall collaborate with the DOE and other government agencies in establishing targets, determining strategies aligned with the NEECP, and monitoring and recording all greenhouse gas emission reductions resulting from energy efficiency and conservation projects.

Governance Commission for GOCCs (GCG). Pursuant to its function of evaluating the performance of GOCCs under Republic Act No. 10149 otherwise known as the GOCC Governance Act of 2011, the GCG shall incorporate energy efficiency as a factor in evaluating the performance of GOCCs. For this purpose, the GCG shall include energy efficiency in the Performance Evaluation System (PES) under GCG Memorandum Circular No. 2013-02, in accordance with the national targets for energy efficiency and conservation under the National EE&C Plan.

Government Financial Institutions (GFIs). The GFIs shall set aside lending funds for energy efficiency projects at concessional rates of interest to attract private sector investments. The GFIs shall, in collaboration with the Insurance Commission, ensure the availability of compatible guarantee or insurance products that would mitigate credit risks associated with energy efficiency investments in small and medium-sized enterprises and performance risks related to energy efficiency solutions developed by ESCOs, engineering companies, and other technology providers.

Inter-Agency Energy Efficiency and Conservation Committee (IAEECC). Evaluate and approve government energy efficiency projects, as defined under the Act and the EEC-IRR, and provide strategic direction in the implementation of the GEMP.

Insurance Commission (IC). The IC shall, in collaboration with the GFIs, ensure the availability of compatible guaranteed products that would mitigate the credit risks associated with energy efficiency investments in small and medium-sized enterprises and performance risks related to the energy efficiency solutions developed by ESCOs, engineering companies, and other technology providers.

Local Government Units (LGUs). LGUs shall assist the DOE in monitoring the compliance of designated establishments with their obligations under the Act and the EEC-IRR for input in the National EE&C Database.

Technical Education and Skills Development Authority (TESDA). The TESDA shall, in collaboration with the DOE and other training and service institutions, develop training regulations for the certification of energy efficiency and conservation officers. It shall ensure the promotion of energy efficiency practices and renewable technologies through its Technical Vocational Education and Training Programs. The TESDA shall implement skills training, assessment, and certification programs for mechanics, technicians, installers, and operators of energy efficient and renewable energy systems.

Targets

Based on desk-based research and the data inputs from DOE, carbon emissions savings and targets were derived for each sector and program, across the short-, medium-, and long-term time horizons.

Table 1: Sectoral targets per Program over the short-, medium-, and long-term

Sector	Programs	Short-Term Emissions Savings (2023 – 2024)	Medium-Term Emissions Savings (2025 – 2028)	Long-Term Emissions Savings (2029 – 2050)
Government	Government Energy Management Programs (GEMP)	1.87 Mt CO2e 16.15%	3.31 Mt CO2e 15.81%	25.06 Mt CO2e 14.48%
Commercial	Philippine Energy Labeling Programs (PELP) /Minimum Energy Performance for Products (MEPP)	7.51 Mt CO2e 16.15%	13.28 Mt CO2e 15.81%	100.50 Mt CO2e 14.48%
Residential	PELP/MEPPs	18.56 Mt CO2e 34.65%	32.79 Mt CO2e 31.66%	248.21 Mt CO2e 23.17%
Industrial	PELP/MEPPs	17.43 Mt CO2e 19.38%	30.81 Mt CO2e 19.17%	233.18 Mt CO2e 18.35%
Transport	Fuel Efficiency Standards (under PELP)	Pending data	Pending data	Pending data
	Electric Vehicle and Charging Stations (EVCS)	Pending data	Pending data	Pending data
	10% EV penetration by 2040	N/A	N/A	116.54 Mt CO2e 8.22%
Utilities & End use	Power Sector Efficiency	4.34 Mt CO2e 27.95%	7.53 Mt CO2e 27.95%	54.03 Mt CO2e 27.95%

Programs

Closely tied to the NEECP is the National EEC Roadmap 2017-2040. In recent years, the Roadmap 2017-2040 guided the Philippines and DOE in EEC and incorporated various sector-specific and cross-sector programs for EEC. These programs had been earlier prioritized by DOE, with specific actions/activities tied to them. With the passing of the EEC Act and the introduction of new provisions, the Roadmap has since been updated by the ASEAN Low Carbon Energy Programs (LCEP) with new programs as stipulated in the EEC Act, thus forming the Roadmap 2023-2050 as presented in Figure 3.

Monitoring and Evaluation (M&E) Framework

Much of a plan's success can be attributed to a detailed M&E framework that allows for tracking of performance, with well-defined activities tied to measurable performance indicators and targets that are time-bound. In this case, it is recommended that the activities reflect and align with the programs of the Roadmap 2023-2050. Further, activities that extend into the medium or long-term should include interim targets to facilitate a phased and stepwise approach to achieving targets. In line with best practices, it is also recommended that strategic actions/activities under each EEC Program are further assigned responsible entities, and a budget that will inform DOE and relevant departments in planning of necessary resource and manpower allocations.

Data Gaps and Limitations

It is important to note that due to limited data availability and limited engagements with DOE and other stakeholders, the recommendations in this report shall be reviewed and validated by DOE.

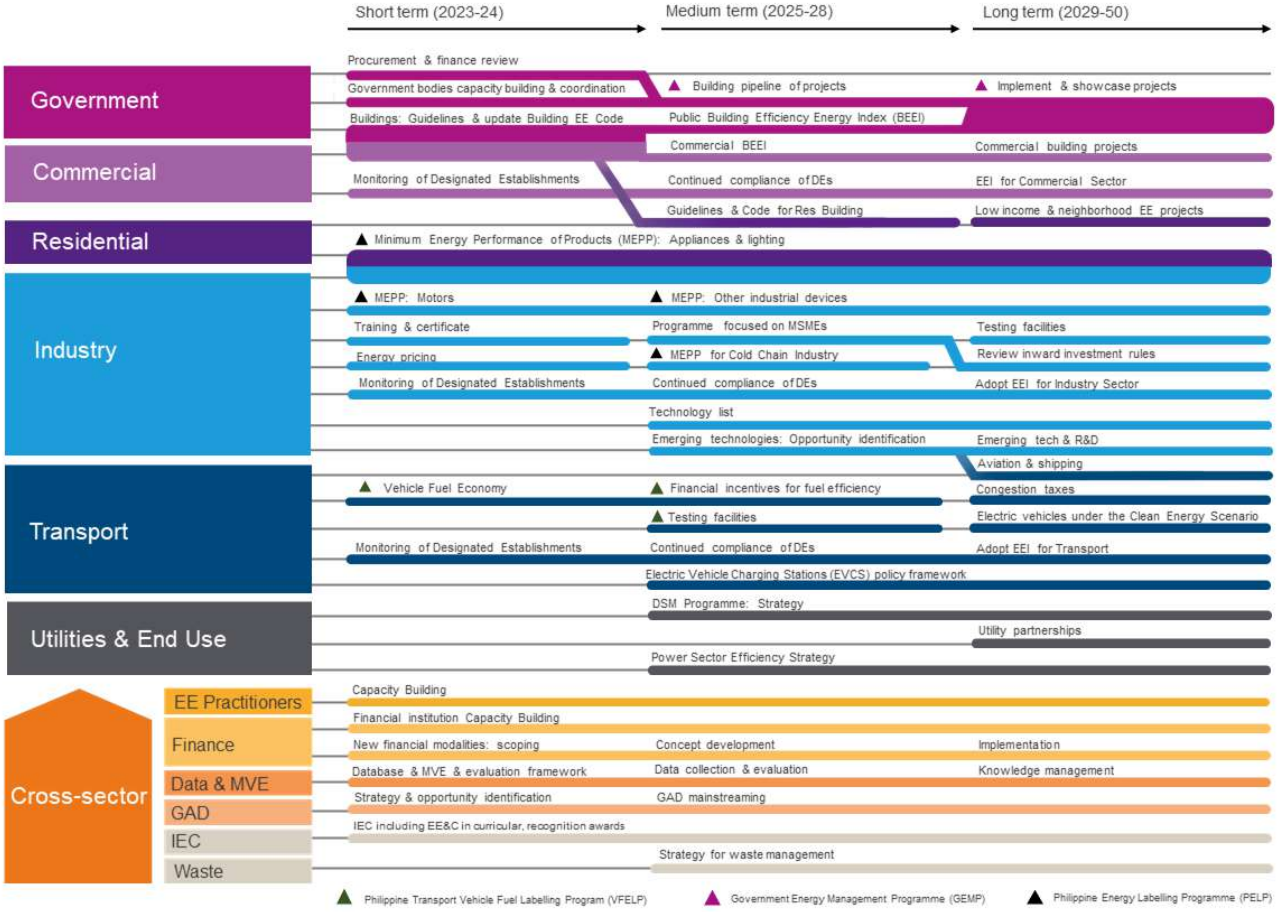


Figure 3: National Energy Efficiency and Conservation Roadmap 2023-2050

NATIONAL ENERGY EFFICIENCY AND CONSERVATION PLAN AND ROADMAP 2023-2050

Background

This section provides a background of the Philippines, drivers of EEC and its sectoral energy consumption by total final energy consumption (TFEC), and the overall trajectory of energy in the coming years.

Country Context

The Philippines has witnessed a rise in energy consumption, driven by economic growth and a growing population in recent years. These trends are set to continue, with the transport and industrial sectors particularly driving the increase in energy demand. Although the Philippines continues to perform well compared to its ASEAN neighbors in terms of energy intensity (this has been attributed, at least in part to high, un-subsidized energy prices and a shift towards service and commercial industries), the rate of decline in energy intensity is slowing. Continued growth in GDP (it has been averaging 6-7%[3] annually over the past decade, except for the year 2020 which saw negative GDP growth due to the COVID-19 pandemic), and the energy-intensive industrial, building/construction, and transport sectors will see an acceleration in energy demand in the Philippines. The growth in the industrial sector is expected to grow the fastest at an annual average of 5.9% or a three-fold increase in energy use from 2018 to 2040. This is driven in part by further governmental programs aimed to boost developments in the manufacturing sector, and the 2018 'Build, Build, Build' initiative which will have a strong influence on further growth in the construction industry.

The Philippines has a strong history of commitment to energy efficiency, dating back to the early 1990s. The Department of Energy Act of 1992 (Republic Act 7638) made explicit the aim for "judicious and efficient utilization of energy" across energy-intensive sectors. In 2004, the National Energy Efficiency Conservation Program was adopted, which served as the framework guiding the DOE's strategy for energy efficiency across all sectors.

Until 2019, energy efficiency activities were generally voluntary, with few incentives supporting widespread adoption. In early 2019, the long-awaited Energy Efficiency and Conservation Act was enacted, putting in place the country's first law specifically relating to energy efficiency. The shift from voluntary to mandated activity, through the introduction of fines as well as incentives, is likely to have a significant impact on energy efficiency action. This change also gives investors a clear indication of the government's commitment to scaling up energy efficiency across all sectors.

While the passing of the Law is a huge step forward for the Philippines Government and DOE, there is still much work to be done to implement its provisions. It is critical that comprehensive, clear, and appropriate strategies and plans are developed to accelerate implementation and build investor confidence in the energy efficiency market.

Key Drivers of EEC in the Philippines

Energy efficiency and conservation strategies and policies have become a global necessity. The International Energy Agency (IEA) has made energy efficiency a top priority, considering it as the first fuel. This is especially relevant for the Philippines as energy demand is increasing due to high rates of urbanization and a fast-growing population. Energy efficiency results in lower pollution, enhanced energy security, and lower energy costs, making it key to supporting economic growth. Energy efficiency also plays an important role in decoupling economic growth from energy demand and emissions, making it critical to sustainable development in the Philippines. This is aligned with the updated Philippine Development Plan (2023-2028) that lays down medium-term plans geared towards the long-term vision of building a resilient society with sustained future growth.

The Philippines has one of the highest energy prices in Asia. For businesses, reducing energy costs through the implementation of energy-efficient products has the potential to free up capital, which they can use to further grow their organization and stimulate wider economic development. Reducing energy costs in households would enable increased spending.

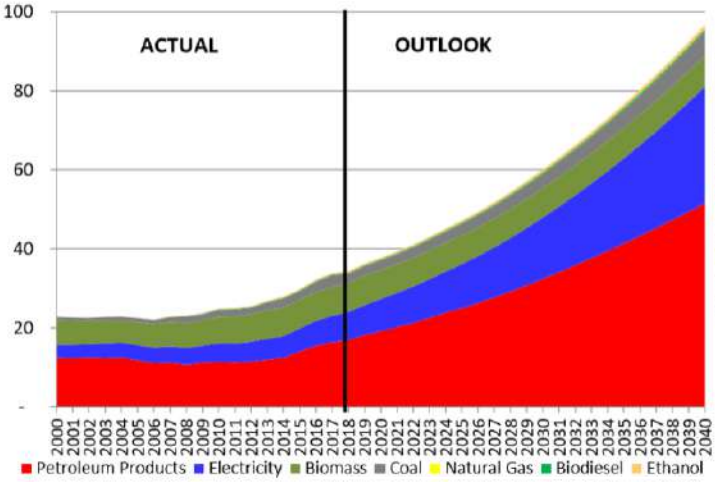
3 https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2020&locations=PH&start=2011

Energy efficiency is one of the eight priority areas of the new DOE administration. As a net energy importer with only moderate conventional energy resources available, a lessened reliance on energy imports is a further driver for energy efficiency.

Alongside the economic benefits, there are important environmental and sustainable development considerations. Energy efficiency plays an important role in decoupling economic growth from energy demand and emissions, making it critical for reducing air pollution, and for emissions reductions - supporting the country to meet its Nationally Determined Contribution (NDC) commitments. Submitted on 14 April 2021, the Philippines' NDC commits to a projected greenhouse gas (GHG) emission reduction and avoidance of 75% between 2020 and 2030 as compared to the business-as-usual scenario - 2.71% of which is unconditional and 72.29% is conditional on aid.

Energy Consumption in the Philippines

Energy consumption in the Philippines has been increasing since 2005. The rate of this increase has also been accelerating since 2014. Population growth and economic development have been the primary drivers of this trend. With both factors showing further forecast growth, it is likely energy consumption will follow the same upward trajectory. As is shown in Figure 4 below, the increase in energy consumption in recent years has been greatest in oil products. Oil products are expected to continue to have a high average annual growth rate until 2050.



	2018		2040		AAGR
	MTOE	% Shares	MTOE	% Shares	2018-2040
Coal	2.4	7.0	6.2	6.5	4.4%
Natural Gas	0.1	0.2	0.1	0.1	0.4%
Petroleum	**16.9**	**49.3**	**51.5**	**53.2**	**5.2%**
Biodiesel	0.2	0.5	0.5	0.5	4.6%
Ethanol	0.3	1.0	1.1	1.1	5.4%
Electricity	**7.1**	**20.7**	**29.5**	**30.5**	**6.7%**
Biomass	7.3	21.3	7.8	8.1	0.3%
Total	**34.3**	**100**	**96.7**	**100**	**4.8%**

Figure 4. Total Final Energy Consumption (TFEC) by Source

The Philippine economy has been growing on average by 6-7% each year over the past decade. The national gross domestic product (GDP) reached US$ 361 billion in 2020, making it the third largest economy in Southeast Asia, behind Indonesia and Thailand. The increase in economic growth has been partly driven by the growing commercial and service sectors, accounting for almost 60% of the overall GDP. Further energy demand increases are expected from growth in the industrial, commercial, and domestic sectors across the entire country, in addition to the electrification level of 95.78% as of June 2022.

Energy security and self-sufficiency are priorities in the Philippines. The Philippines is a net energy importer with only moderate conventional energy resources available. Net energy imports account for around half of the total primary energy supply, which is comprised of oil and oil products (63%), coal (36%), and a small amount of biofuel (less than 1%). Oil importation is driven by lower international crude oil prices and stable domestic demand for oil products. As a net energy importer, the need for energy security is a further driver for energy efficiency.

Energy Intensity

Energy intensity in the Philippines is lower than in neighboring countries. Although energy intensity continues to decline, the rate is slowing. Energy intensity is defined as the amount of energy used to produce a given output or service and is the most widely used aggregate metric for energy efficiency progress and is measured by changes in the ratio of GDP per unit of energy consumed. Compared with its neighbors, the Philippines' improvement in energy intensity has been strong, energy intensity has reduced by 40% since 2000, compared with the Southeast Asian average of 24% over the same period

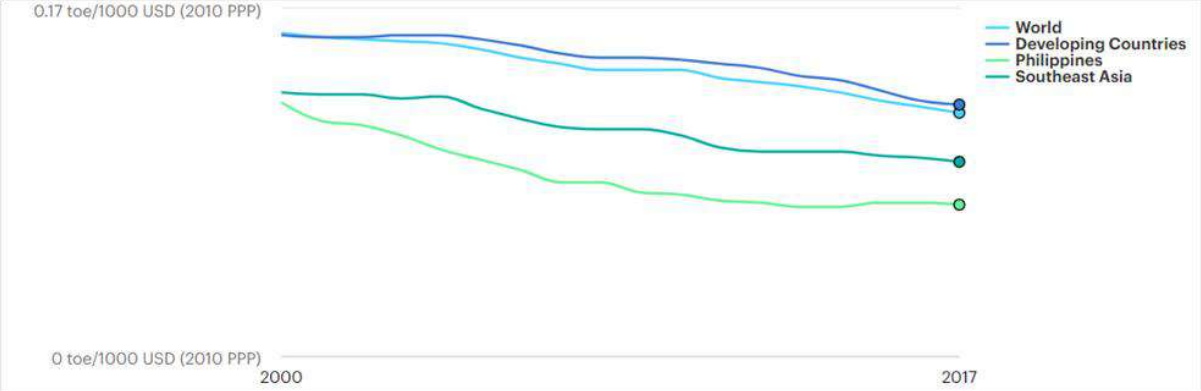


Figure 5: Energy Intensity measured in terms of primary energy and GDP, 2000-2017 (source: IEA, 2020)

The improvements have been attributed to a range of factors, including the impact of the country's high energy prices (Filipinos pay the second-highest electricity prices in Asia, and unlike its Asian neighbors Thailand, Indonesia, and Malaysia, electricity rates in the Philippines are not subsidized by the government), and conservation policies in reducing demand. A strong driver of this trend is the country's shift toward less energy-intensive service/commercial industries compared with countries such as Vietnam and Thailand. Forecast growth in energy-intensive industries such as construction and transport indicates there will be a slowing decline in energy intensity.

The Philippines' total final energy consumption (TFEC) continues to grow year on year and reached 34.31 MTOE in 2018, which results in an average annual increase of around 6% over the past five years.

Energy Consumption by Sector

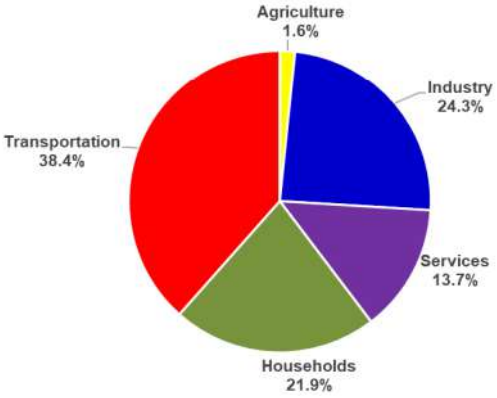


Figure 6: Total Final Energy Consumption by Sectoral Share (2018-2040)

The transport sector represents the largest share of the TFEC in the Philippines. The sector has experienced a sharp increase, particularly since 2014. Higher household incomes and historically low motorization rates (number of vehicles relative to population size) have likely influenced growth in vehicle ownership, and growth in contribution to the TFEC of the sector. Road transportation is by far the dominant subsector accounting for 98% of all passenger traffic and almost 90% of all transport-related energy consumption. Unsurprisingly, the sector is characterized by an overwhelming share (96%) of oil products in its energy consumption mix. Even though road transport remains the largest contributor to this sector's energy consumption, railway, and domestic air transport trends also indicate a steady increase.

The industry represents the second-largest share of the TFEC. Compared to the transport sector, there has been slower growth in energy consumption in the Industrial sector. The industrial sector can be divided into three major sub-sectors: manufacturing, mining, and construction. Manufacturing leads in terms of energy consumption in the sector at 93%, followed by mining at 4% and construction at 3%. Within these, food processing and cement have shown the most significant growth in contributions to

energy intensity (the cement industry used 2.7 MTOE in 2017, 90% of which comes from coal, and food processing used 2.1 MTOE, more than half of it coming from biofuels and waste). The contribution of mining to the growth in industrial energy consumption has declined, as evidenced by the closure of several mining firms in 2017, leading to an overall decline in production and output.

The residential (households) sector is the third-largest contributor to the TFEC, with moderate growth in energy consumption. This trend is attributed mostly to the increased utilization of electricity in the sector, coupled with improved living standards because of increased incomes. Energy consumption in the residential sector is characterized by a large share of biofuels/waste, particularly in rural areas. Biofuels/waste supplies more than half (53%) of the sector, and the remainder is split between electricity (32%) and oil products (16%). With efforts undertaken to reach 100% energy access, the electricity share (total and relative) is growing continuously in the residential sector. Energy consumption in this sector is expected to increase, as more buildings are developed for housing.

The commercial sector takes up a smaller share of final energy consumption, at only 13.7% of the TFEC. However, energy consumption in this sector has increased rapidly due to strong economic growth. The commercial sector refers to non-manufacturing businesses. It includes commercial buildings, hotels, hospitals, and schools. The sector is characterized by a high demand for oil products (47%) and electricity (45%), with biofuels/waste representing a small share at 8%. This is mainly due to the operation of (commercial) buildings. Appliances in these buildings, such as lighting or air-conditioning, contribute to energy consumption. Energy consumption by the commercial sector is expected to further increase in the coming years, with increased urbanization and the construction of new buildings in the Philippines.

Energy Outlook

The country's total final energy consumption is forecasted to increase to 96.7 MTOE in 2040. This is an almost 200% increase from 2018 levels. The transport sector is expected to remain the largest energy consumer, followed by the industrial and residential sectors. The growth in the industrial sector is expected to be one of the fastest at an annual average of 5.9%, driven in part by further governmental programs aimed to boost developments in the manufacturing sector. The Government's 2018 'Build, Build, Build' initiative is also likely to have a strong influence on further growth in the construction industry, driving the demand for cement and basic metals. The 180 billion USD infrastructure expansion programs is looking to develop and upgrade several airports, railways, rapid bus transits, roads, bridges, and seaports across the country. The programs aim to enhance mobility, improve rural incomes, and create jobs.

The DOE has forecasted that the country's energy mix in 2040 will appear like the energy mix to date, with a strong emphasis on oil products (50%). This is due, in part, to the predicted continued demand for diesel and petrol from the transportation sector. While there have been programs to test electric vehicles and the use of natural gas in public transport, these have been limited. The limited infrastructure and regulatory barriers in place mean that it may be several years before the use of electric vehicles can be effectively scaled up.

Economic growth was projected to significantly decelerate in 2020 due to the impact of the Covid-19 pandemic. Nevertheless, it rebounded in 2021-2022 as global conditions improve, and with more robust domestic activity bolstered by public investment momentum and the 2022 election-related spending. All of this will have a significant impact on the country's energy consumption profile in the near future.

As energy use continues to increase, the Philippine government has prioritized the development of a range of legislations and regulatory and policy instruments to increase the uptake of energy efficiency initiatives. Most notable has been the long-awaited enactment of the Energy Efficiency and Conservation Act, in April 2019, and its accompanying issuances establishing the regulatory framework for energy efficiency and conservation in the Philippines.

EEC Policy and Legislative Background

Energy efficiency and conservation is incorporated in several pieces of legislation and policies. Table 3 presents a summary of the relevant national policies and legislation in the Philippines related to energy efficiency and an overview of its role in driving EEC.

Table 2: Overview of EEC policy and legislation in Philippines

Category	National Framework	Year	Overview
Energy Efficiency Regulations	EEC Act	2019	The EEC Act (Republic Act No. 11285) came into force in early 2019 and is the first specific legislation underpinning energy efficiency and conservation. The long-awaited enactment of the EEC Act has been welcomed by many energy efficiency experts and government officials. The EEC-IRR accompanies the EEC Act. Pursuant to Section 36 of the EEC Act, 38 Codes and Guidelines are to be issued following the release of the EEC and the EEC-IRR. At the time of writing, a handful of these had been developed.
Energy Efficiency Strategies	EEC Roadmap 2017-2040	2017-2040	The *Philippines Energy Efficiency and Conservation Roadmap 2017-2040* sets out DOE's strategic plans and actions required to create a higher level of energy efficiency across all sectors. It states the overall objective "to support the country's economic development through efficiency gains and ensure energy security with a reduction in energy intensity across key economic sectors"[4]. The Roadmap integrates identified opportunities with existing energy efficiency policy instruments and strategies, and incorporates the priority goals of the country. The Roadmap is not, however, comprehensive in its setting out of all current DOE programs related to energy efficiency. Existing public sector programs, such as the Government Energy Management Programs (GEMP), are not referred to in the Roadmap. Nor does the Roadmap align with the provisions of the EEC Act. Many of the strategies in the Roadmap are not written into the Act.
	EEC Roadmap 2023-2050	2023-2050	The *Philippines Energy Efficiency and Conservation Roadmap (2023-2050)* is the revised Roadmap which provides an updated outline of the strategic plans and actions for EEC in the Philippines across all sectors, including implementing key provisions of the recent Energy Efficiency and Conservation Act and its accompanying Implementing Rules and Regulations. The UK Government, through the FCDO-funded ASEAN Low Carbon Energy Programs (LCEP), provided technical assistance to the DOE to update the Roadmap 2017-2040
Energy Regulations	Energy Act	1992	Prior to the enactment of the EEC Law in 2019, the Department of Energy Act of 1992 (Republic Act 7638) was the most relevant piece of over-arching legislation. The Act created the Department of Energy for all the functions and activities related to Energy and for other purposes. The Department of Energy is mandated to provide adequate, reliable, and affordable energy to industries, to enable them to provide employment opportunities and low cost of goods and

[4] DOE (2016) Energy Efficiency and Conservation Roadmap 2017-2040

			services, and to the ordinary citizen, to enable them to achieve a decent lifestyle.
Energy Performance and Labeling Requirements	Philippine Standards and Labelling Programs	2016	Superseded and further strengthened the labelling initiative, initially made in collaboration with the Department of Trade and Industry, now under the control of the Department of Energy. This sets out energy efficiency requirements (scope, label, MEPP – if applicable) for the following products: • Air Conditioners • Refrigerating Appliances • Television Sets • Lighting Products
Electric Vehicles Regulations	Electric Vehicle Industry Development Act Republic	April 2022	The Act aims to establish a national energy policy and regulatory framework for electric vehicles (EVs) and the installation of electric charging stations. DOE is responsible for the promotion of EVs, development of charging stations and harmonization of policies and regulations on the use of charging stations with other government agencies. In the Philippine Energy Plan 2018-2040, the energy demand outlook considered the Clean Energy Scenario (CES) as an alternative to business as usual (BAU) assumptions. Under the CES, there will be a 10% penetration rate for EVs for road transport by 2040.

Additionally, as of the time of writing, all Memorandum Circulars (MCs), Department Order (DOs) and Department Circular (DCs) issued by DOE are summarized in table 3.

Table 3: All energy efficiency-related issuances by DOE under the EEC Act

No.	Issuances under the EEC Act	Date of Effectivity
1	**DC2019-11-0014:** *Implementing Rules and Regulations of Republic Act No. 11285 (Energy Efficiency and Conservation Act)*	December 21, 2019
2	**DC2020-06-0015:** *Prescribing the Guidelines of the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors and Dealers of Electrical Appliances and other Energy-Consuming Products (ECP)*	July 11, 2020
3	**DC2020-06-0016:** *Prescribing the Minimum Energy Performance for Products (MEPP) Covered by the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors, Dealers and Retailers of Energy-Consuming Products (ECPs)*	July 11, 2020
4	**DC2020-09-0018:** *Guidelines in the Administration, Classification of Energy Service Company (ESCO)*	October 09, 2020
5	**DC2020-10-0023***: Prescribing Policy Framework for the Development of the Fuel Economy Rating, Fuel Economy Performance, and Related Energy Efficiency and Conservation Policies for the Transport Sector and other Support Infrastructures*	December 12, 2020
6	**DC2020-12-0026:** *Adoption of the Guidelines on Energy Conserving Design of Buildings*	March 06, 2021
7	**DC2021-01-0001:** *Guidelines for the Qualifications, Assessments, Registration and Certification of Energy Conservation Officers (CECO), Energy Managers (CEM) and Energy Auditors (EA)*	March 06, 2021
8	**DC2021-05-0011:** *Guidelines in the Endorsement of Energy Efficiency Projects to the Board of Investment for Fiscal Incentives*	June 17, 2021
9	**DC2021-07-0023**: *Providing a Policy Framework on the Guidelines for the Development, Establishment, and Operation of Electric Vehicle Charging Stations (EVCS) in the Philippines*	August 19, 2021

No.	Issuances under the EEC Act	Date of Effectivity
10	**DC2022-03-0004:** *Guidelines for the Endorsement of Energy Efficiency Strategic Investments to the Board of Investments for Fiscal Incentives*	April 06, 2022
11	**DC2022-03-0005:** *Guidelines for the Recognition of Testing Laboratories for the Examination, Testing & Verification of the Energy Efficiency of Energy-Consuming Products (ECPs) & the Fuel Efficiency of Transport Vehicles, Including the Issuance of Certificate of Endorsement to the Board of Investments (BOI) for Fiscal Incentives*	April 08, 2022
12	**DC2022-03-0006:** *Adoption of Training Regulations Certification Process for Energy Auditors (EAs)*	April 06, 2022
13	**DC2022-03-0007:** *Adoption of Training Regulations for the Certification of Energy Conservation Officers (ECOs)*	April 28, 2022
14	**DC2022-03-0008:** *Adoption of Training Regulations and Prescribing Certification Process for Training Institutions and Energy Managers (EMs)*	April 28, 2022
15	**DC2022-04-0013***: Adopting of Certification Guidelines for Energy Audit Conducted by Firm, Partnership, Corporation, and Sole Proprietorship (FPCS)*	May 19, 2022
16	***DC2022-11-0035:*** *Expanding the Coverage of the Philippine Energy Labeling Program (PELP) for the Compliance of Importers, Manufacturers, Distributors, Dealers and Retailers of Energy Consuming Products (ECPs)*	December 16, 2022
17	***DC2023-05-0009:*** *Government Energy Management Program (GEMP) Guidelines on Strengthening the Energy Efficiency and Conservation Professionals, Adoption of Training Module for Capacity Building and Prescribing Certification Process for the Recognition of Training Institutions*	May 23, 2023
18	**DO2020-01-0001:** *Organizing the Inter-Agency Energy Efficiency and Conservation Committee (IAEECC)*	January 09, 2020
19	**DO2020-01-0002:** *Operationalization of the Strengthening of the Energy Utilization Management Bureau (EUMB), Support Services and Field Offices in Accordance with Republic Act No. 11285 or the Energy Efficiency and Conservation Act (EEC Act)*	January 28, 2022
20	**DO2020-06-0008:** *Guidelines on Reassignment of DOE Personnel not from EUMB who have signified Interest to be Part of the Strengthened or Reorganized EUMB*	June 20, 2020
21	**DO2021-09-0014:** *Guidelines of the Energy Efficiency Excellence Awards*	September 15, 2021
22	**DO2022-03-0005:** *Guidelines on the Issuance of the Certificate of Energy Efficiency Cost Reductions*	March 22, 2022
23	**DO2022-04-0006:** *Guidelines on the Endorsement of Government Energy Efficiency Projects to the IAEECC Pursuant to the GEMP Guidelines*	April 07, 2022
24	**DO2023-01-0001:** *Institutionalizing the Energy Management Team (EMT) to Develop an Energy Management System (EnMS)*	January 10, 2023
25	***DO2023-02-0008:*** *Guidelines on Strengthening the Energy Efficiency and Conservation Professionals under the Government Energy Management Program (GEMP)*	February 16, 2023
26	**MC2020-05-001:** *Directing All Designated Establishments Under Commercial, Industrial and Transport Sectors to Submit Energy Consumption Reports*	June 11, 2020
27	**IAEECC Resolution No. 1, s. 2020***: Directing All Government Agencies, including the LGUs and Foreign Service Posts, to Comply with GEMP, Ordering the Department of Energy to Conduct Energy Audits and Spot Checks, and Submit Proposed Improvements to the GEMP*	October 24, 2020
28	**IAEECC Resolution No. 2, s. 2021***: Directing All Government Agencies, including the LGUs and Foreign Service Posts, to use Energy Efficient Light Emitting Diode (LED) Lamps in Government Buildings and Facilities as a Requirement for Compliance to the Government Energy Management Program (GEMP)*	June 17, 2021
29	**IAEECC Resolution No. 3, s. 2021:** *Directing All Government Entities including the LGUs and Foreign Service Posts, to Use Inverter Type Air-Conditioning Units or Similar Equivalent Technologies in Government Buildings and Facilities as a Requirement for Compliance to the GEMP*	October 07, 2021

No.	Issuances under the EEC Act	Date of Effectivity
30	**IAEECC Resolution No. 4, s. 2021 :** *Enjoining The Council of Good Local Governance to Consider, Include and Adopt the Energy Efficiency and Conservation (EEC) as one of the Areas in the Criteria per Section 7 of Republic Act No. 11292-"The Seal of Good Local Governance Act of 2019"*	December 16, 2021
31	**IAEECC Resolution No. 5, s. 2022:** *Directing All Government Entities (GEs), including the Local Government Units (LGUs) and Foreign Service Posts to Observe the Approved GEMP Guidelines*	February 11, 2022
32	**IAEECC Resolution No. 6, s. 2022** *Recommending to the Governance Commission for GOCCs to Consider, Include, and Adopt EEC as One Criteria in the Performance Evaluation System for GOCCs in the Grant of Performance-Based Incentives*	April 04, 2022
33	Implementing Guidelines of The Philippine Energy Labeling Program for Lighting Products	June 18, 2021
34	Implementing Guidelines of The Philippine Energy Labeling Program for Television Sets	June 18, 2021
35	Implementing Guidelines of the Philippine Energy Labeling Program for Refrigerating Appliances	June 18, 2021
36	Implementing Guidelines of the Philippine Energy Labeling Program for Air Conditioners	June 18, 2021
37	Implementing Guidelines of The Philippine Energy Labeling Program on Registration, Enforcement, Monitoring, Verification, and Compliance Mechanism	June 18, 2021
38	Implementing Guidelines for the Specification, Dimension and Presentation of Energy Label under the Philippine Energy Labelling Program	July 08, 2022
39	Implementing Guidelines for the Monitoring and Verification (M&V) Procedures of Energy Efficiency (EE) Projects and Administration of Obligations of Energy Service Company (ESCO)	December 08, 2022

Vision and Objectives

Vision

To establish the implementation of the Energy Efficiency and Conservation Act and institutionalize energy efficiency and conservation as a national way of life geared towards the efficient and judicious utilization of energy across all sectors.

Objectives

The objectives of the NEECP are to:

- Provide a national framework to institutionalize the EEC Act.
- Define and outline all EEC programs to be implemented, their objectives and associated emission reduction targets over various time horizons.
- Provide a governance structure that brings together all key stakeholders and define their respective roles in fulfilling the provisions of EEC Act.
- Provide a Monitoring and Evaluation (M&E) framework against the strategic actions of the National EEC Roadmap 2023-2050 to track performance against pre-defined targets and provide a basis for learning and improvement.

Governance

This section summarizes the broader enabling frameworks relevant to EEC (e.g. the EEC Act, the Roadmap, and highlights the central role of the DOE-EUMB (reflecting the EEC Act), noting the other agencies instrumental contribution in the implementation of the EEC Act. It is also intended to highlight

the roles of agencies and other entities in stakeholder engagements, public and private sector co-operation, and international development assistance for energy efficiency.

Enabling Frameworks of the NEECP

This section outlines the enabling frameworks for the NEECP including the EEC Act, government decrees, energy efficiency strategies, and the EEC Roadmap.

Energy Efficiency and Conservation Act 2019

The EEC Act came into force in April 2019 and is the first specific legislation underpinning energy efficiency and conservation. The long-awaited enactment of the EEC Law has been welcomed by many energy efficiency experts and government officials, having first been submitted to Congress in 1988 more than three decades ago. An IRR also accompanies the EEC Act. Pursuant to Section 36 of the EEC Act, 31 Codes and Guidelines are to be issued following the release of the EEC Act and its IRR. At the time of writing, most of these have already been developed.

Although the Philippines has a strong history of commitments to energy efficiency, dating back to the early 1990s, the previous legislation, and programs consisted of voluntary measures rather than mandates. The Philippines lacked a strong overarching regulatory framework that would drive widespread adoption of energy efficiency and conservation initiatives. Prior to the enactment of the EEC Act in 2019, the Department of Energy Act of 1992 (Republic Act 7638) was the most relevant piece of over-arching legislation. It stated that the DOE aims for "judicious and efficient utilization of energy" across energy-intensive sectors. In 2004, the National Energy Efficiency Conservation Program was adopted, which served as the framework guiding DOE strategy in energy efficiency across all sectors. The new EEC Act builds on these ambitions and activities but also empowers, authorizes, and mandates the DOE's enforcement of energy efficiency, imposing mandatory requirements, and establishing key incentives. The DOE may now impose fines and penalties on entities that violate any provision of the law and its IRR.

In addition to strengthening DOE as the implementing body, the Act sets out the following key requirements:

- For key government departments and agencies to collaborate with DOE to implement the Act's provisions, including the Inter-Agency Energy Efficiency and Conservation Committee (IAEECC)
- For the certification and accreditation of individuals (energy managers, energy conservation officers, energy auditors) and entities (ESCOs) in accordance with the frameworks and requirements under the Act
- For energy-intensive organizations to develop energy efficiency plans and implement projects, and report their annual energy consumption to the DOE,
- For the development of MEPP for energy-consuming products, for household appliances, in the commercial, transport, and industrial sectors
- For the DOE to pursue a DSM program for the electric power industry
- For LGUs to take on more responsibility with respect to energy efficiency projects in their jurisdictions. LGUs are required to incorporate energy efficiency and conservation into their Development Plans.

Energy Efficiency Action Plan (EU Switch) (2016-2020)

EU-Switch was engaged by DOE to develop an Action Plan to further elaborate on, and establish parameters for the activities set out in the Roadmap. These were set out on a sector-by-sector basis, detailing resources, institutional arrangements, stakeholder engagement, and timeframes for completion.

The Action Plan tries to take a systems approach and consider a range of actors, policy instruments, and market conditions that are needed to successfully implement the plan. Hence, the Action Plan

positions the DOE as a coordinator, facilitator, and technical advisor on energy efficiency, rather than as the lead implementer.

This Action Plan sets out an implementation plan for the Roadmap with a focus on actions up to 2020 (corresponding to the short- and medium-term actions). It contains 39 recommended actions and timelines for DOE across the four main energy-consuming sectors. It offers additional recommendations for cross-sectoral action that range from establishing a stronger institutional framework, building energy efficiency understanding and capacity in the finance sector, to establishing performance monitoring frameworks.

Energy Efficiency and Conservation Roadmap (2023-2050)

In recent years, the DOE had been guided by the Philippines Energy Efficiency and Conservation Roadmap 2017-2040, which set out DOE's strategic plans and actions required to create a higher level of energy efficiency across all sectors. It states the overall objective "to support the country's economic development through efficiency gains and ensure energy security with a reduction in energy intensity across key economic sectors". The Roadmap 2017-2040 integrates identified opportunities with existing energy efficiency policy instruments and strategies and incorporates the priority goals of the country.

The 2017-2040 Roadmap is not, however, comprehensive in its setting out of all current DOE programs related to energy efficiency. Existing public sector programs, such as the Government Energy Management Programs, are not referred to in the Roadmap, nor does the Roadmap align with the provisions of the EEC Act. Many of the strategies in the Roadmap are not written into the Act.

The Roadmap has thus been revised to reflect the updated priorities of the DOE, including most importantly, strategies to ensure the implementation and compliance with mandatory provisions in the Act. The revised Philippines Energy Efficiency and Conservation Roadmap (2023-2050) developed by LCEP provides an updated outline of the strategic plans and actions for EEC in the Philippines across all sectors, including implementing key provisions of the EEC Act, and its accompanying IRR.

Provisions of the EEC Act relating to NEECP

As the EEC Act mandates the NEECP, Table 5 summarizes the relation between these two documents. The relevant provisions in the EEC Act relating or referencing the NEECP are highlighted.

Table 4: Provisions and inclusions in the EEC Act that relate to the NEECP

Inclusions in the EEC Act	Relevant provision in the EEC Act	Implementation status
Institutional Arrangements	**Chapter I- General Provisions, Section 4: Definition of Terms** (z) National Energy Efficiency and Conservation Plan (NEECP) refers to the national comprehensive framework, governance structure, and program for energy efficiency and conservation with defined national targets, feasible strategies, and regular monitoring and evaluation	NEECP shall incorporate a governance structure. A structure with interactions and actors has been proposed within this recommendation report.
	Chapter II - Roles and Responsibilities of Agencies	The EEC Act outlines all the relevant government agencies' roles and responsibilities, including LGUs and end-users. This recommendation report further includes other non-state actors.
Monitoring and Evaluation (M&E)	**Chapter II - Roles and Responsibilities of Agencies, Section 5. Implementing Agency** DOE shall have the following powers and functions: (b) Develop a system of monitoring the implementation of the NEECP, including the targets that are established	The M&E framework in this report outlines the recommended structure for monitoring performance of energy efficiency activities, with time-bound targets. Emission reduction targets tied to sectoral EE programs have been defined in this recommendation report. These targets were developed using the accompanying Excel data tool

Institutional Arrangements

This section outlines the institutional arrangements around EEC and the NEECP. Figure 9 illustrates the interactions between the key state and non-state actors, while the following subsections elaborate and explain their interactions and respective roles or responsibilities in more detail.

Entities in green boxes relate to the state/government, while entities in purple boxes are non-state actors.

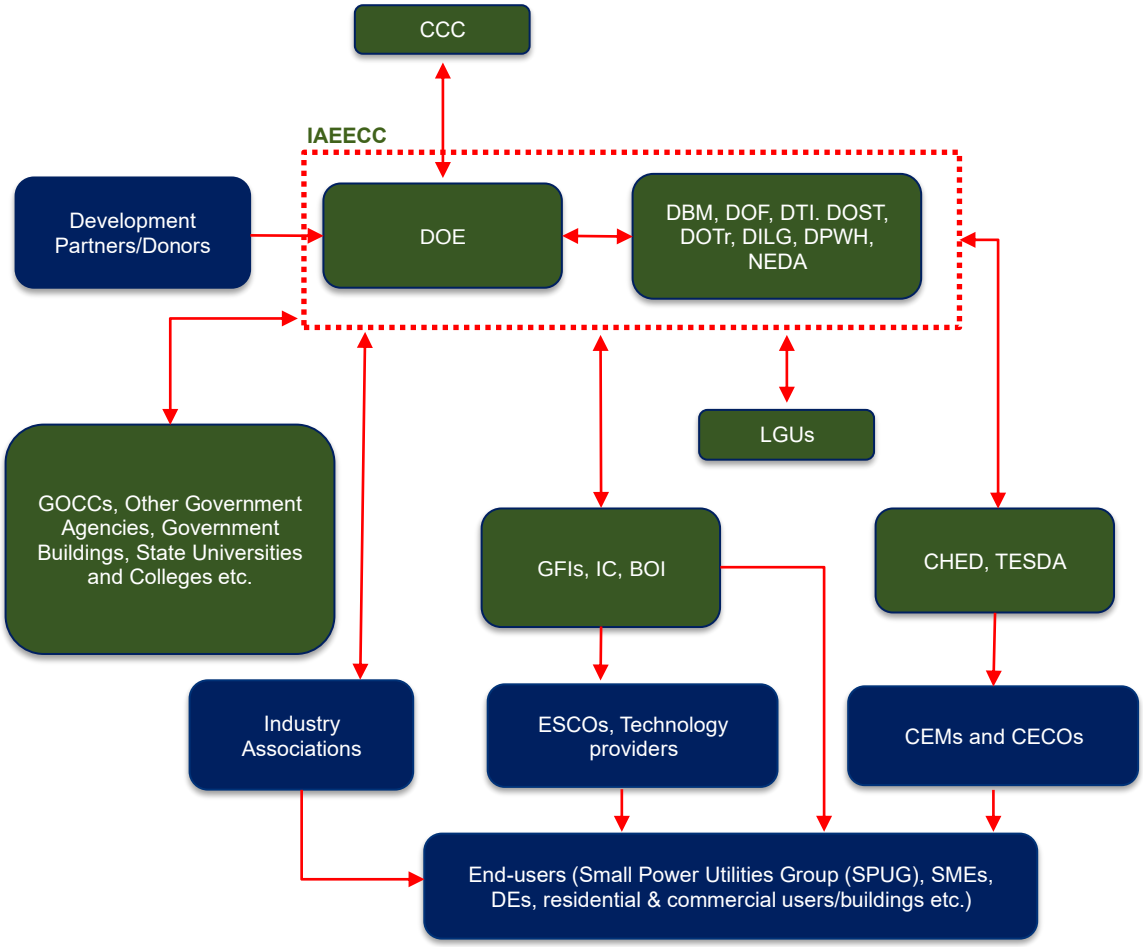


Figure 7: Governance Framework of the NEECP

Department of Energy

The EEC Act positions the DOE as the primary government agency responsible for the planning, formulation, and development of energy management policies and related energy efficiency and conservation programs. It requires the DOE to consult and coordinate with other government agencies and the private sector, or to create an interagency committee for the effective implementation of energy efficiency and conservation policies for the government.

DOE is also responsible for updating, developing, and maintaining the NEECP, to ensure efficient evaluation, analysis, and dissemination of data and information for enforcement, planning, and policy-making purposes. DOE is also responsible for a system of monitoring the implementation of the NEECP, including the targets established. Beyond these responsibilities, DOE has various sector- and program-specific responsibilities, together with other government agencies.

The DOE is one of 24 national government agencies under the Executive Office of the President, and is responsible for all policies, programs, and activities of the Philippine Government relating to energy exploration, development, utilization, distribution, and conservation.

The DOE in turn is divided into six (6) key bureaus and five (5) services:

List of DOE's Bureaus

- Energy Policy and Planning Bureau (EPPB)
- Energy Resources Development Bureau (ERDB)
- Electric Power Industry Management Bureau (EPIMB)
- Oil Industry Management Bureau (OIMB)
- Renewable Energy Management Bureau (REMB)
- Energy Utilization and Management Bureau (EUMB)

List of DOE's Services

- Administrative Services (AS)
- Energy Research and Testing Laboratory Services (ERTLS)
- Financial Services (FS)
- Information Technology and Management Services (ERTLS)
- Legal Services (LS)

The key bureau for energy efficiency is the EUMB. The EEC Act includes a provision for the strengthening and reorganization of the EUMB. The EUMB now comprises the:

- **Alternative Fuels and Energy Technology Division (AFETD)**. AFETD is in charge for the development of Particular Product Requirements (PPR) and Minimum Energy Performance (MEP) for energy consuming products (ECPs). Also, AFETD handles the fuel economy labeling of transport vehicles.
- **Energy Efficiency and Conservation Programs Management and Technology Promotion Division (EPMPD).** EPMPD oversees' annual energy utilization report obligation of designated establishments, energy efficiency projects and certification for EE practitioners. The EPMPD also looks at MEPP for Sectors, and Energy Conserving Design for Buildings.
- **Energy Efficiency and Conservation Public Sector Management Division (EPSMD).** EPSMD oversees the government energy efficiency management programs and the endorsement guidelines for government financial institutions.
- **Energy Efficiency and Conservation Performance Regulation and Enforcement Division (EPRED).** EPRED oversees developing monitoring systems for targets under the NEECP, the compliance to MEPP and Energy Labels, as well as developing schedules of fines, penalties, and violations under the EEC Act.
- **Dedicated Electric Vehicle Office (DEVO).** DEVO is the dedicated office created under Republic Act No. 11697 otherwise known as the Electric Vehicle Industry Development Act (EVIDA). The DEVO currently handles matters for the effective implementation of EVIDA.

Inter-Agency Energy Efficiency and Conservation Committee (IAEECC)

The EEC Act also created a new government body, the Inter-Agency Energy Efficiency and Conservation Committee (IAEECC), which oversees the implementation of the GEMP aimed at reducing electricity and fuel consumption by the government. The DOE-EUMB serves as the Secretariat for the IAEECC and leads the implementation of the GEMP. The Committee is composed of the Secretaries of the:

- Department of Energy (DOE)
- Department of Budget and Management (DBM)
- Department of Finance (DOF)
- Department of Trade and Industry (DTI)
- Department of Transportation (DOTr)
- Department of Science and Technology (DOST)
- Department of the Interior and Local Government (DILG)
- Department of Public Works and Highways (DPWH)
- Director General of the National Economic and Development Authority (NEDA)

Climate Change Commission

Outside of the DOE, the Climate Change Commission (CCC) is a policy-making government body, established in 2009 under the Climate Change Act, to coordinate, monitor, and evaluate programs and action plans for climate adaptation and mitigation in the Philippines. The CCC sits within the Office of the President and is the "sole policy-making body of the government which shall be tasked to coordinate, monitor, and evaluate the programs and action plans of the government relating to climate change pursuant to the provisions of the Act". The CCC is responsible for the development of the Philippines' NDC.

Under the new EEC Act, the CCC is mandated to collaborate with the DOE on establishing targets, formulating strategies, and monitoring and recording all GHG emission reductions resulting from EEC projects in line with the NEECP.

Other Key Stakeholders and Roles

Table 5 outlines the roles and responsibilities of other key stakeholders involved in the governance of the NEECP, as included in the framework and how they interact with each other. More detailed sectoral-specific roles and responsibilities per sectoral Programs are outlined in the Appendix.

Table 5: Roles and Responsibilities of Other Key Stakeholders of the NEECP

Stakeholders	Description and Roles/Responsibilities
Development Partners/Donors	Development partners/donors provide DOE/IAEECC with aid and technical assistance, such as capacity building and policy/regulatory reform related to energy efficiency. DOE/IAEECC are responsible for working closely with these partners, provide input where required.
GOCCs, National Government Agencies, Government buildings, State Universities and Colleges etc.	'End-users' of the GEMP that is driven by the DOE and IAEECC. They are responsible for ensuring compliance to GEMP and increasing energy efficiency in their buildings.
Government Financial Institutions (GFIs), Insurance Commission (IC), Board of Investments (BOI)	As per the EEC Act, GFIs must set aside lending funds for EE projects at concessional interest rates to attract private sector investments. GFIs and IC shall make available guarantee or insurance products to SMEs and ESCOs to mitigate credit risks and performance risks associated with these respective parties.
Local Government Units (LGUs)	LGUs are responsible for enacting the EEC Act on a local level, through the development of their respective Local Energy Efficiency and Conservation Plans (LEECP) and have these validated with the DOE and IAEECC. The DOE and IAEECC shall provide support where needed.
Commission on Higher Education (CHED), Technical Education and Skills Development Authority (TESDA)	TESDA and CHED shall develop training regulations for the certifications of energy managers (CEMs) and energy efficiency and conservation officers (CECOs), promote energy efficiency practices through its Technical-Vocational Education and Training programs, and implement skills training, assessment, and certification programs for mechanics, technicians, installers, and operators of energy efficient systems.
Industry Associations	Industry associations, such as the Philippine Appliance Industry Association, contribute to the development of MEPP and PELP, working together with DOE and end-users
ESCOs, Technology providers	ESCOs and technology providers provide a broad range of energy efficiency solutions and implement EE projects to end-users
Certified Energy Managers (CEMs), Certified Energy Conservation Officers (CECOs)	CEMs and CECOs shall be certified for end-users such as Designated Establishments (DEs).
End-users (SMEs, Designated Establishments, residential & commercial users/buildings etc)	End-users cover a broad range of entities across the residential and commercial sectors, such as SMEs, DEs, and residential buildings. All energy end users shall use every available energy resource efficiently and promote the development and utilization of new and alternative energy efficient technologies and systems, including renewable energy technologies and systems across sectors in compliance with the declared policies of the EEC Act.

Sectoral Targets

This section provides further background and context to the respective sectors, past and ongoing initiatives within each, and the projected emission reduction targets attributed to the sector and their EEC Program. Table 7 summarizes them according to short-, medium-, and long-term time horizons.

Economy-wide Targets

Submitted on 14 April 2021, the Philippines' first NDC commits to a projected GHG emission reduction and avoidance of 75% over the 2020 -2030 period as compared to the business-as-usual scenario, 2.71% of which is unconditional and the remaining 72.29% conditional on aid. This represents the country's ambition across the key sectors of agriculture, waste, industry, transport, and energy. This commitment is referenced against a projected business-as-usual cumulative economy-wide emission of 3,340.3 MtCO2e for the same period.

Sectoral Status and Targets

Table 4: Summary of targets of each Program in the short-, medium- and long-term time horizons

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Government	GEMP	1.87 Mt CO2e 16.15%	3.31 Mt CO2e 15.81%	25.06 Mt CO2e 14.48%
Commercial	PELP/MEPPs	7.51 Mt CO2e 16.15%	13.28 Mt CO2e 15.81%	100.50 Mt CO2e 14.48%
Residential	PELP/MEPPs	18.56 Mt CO2e 34.65%	32.79 Mt CO2e 31.66%	248.21 Mt CO2e 23.17%
Industrial	PELP/MEPPs	17.43 Mt CO2e 19.38%	30.81 Mt CO2e 19.17%	233.18 Mt CO2e 18.35%
Transport	Fuel Efficiency Standards (PELP)	-	-	-
	EVCS bill	-	-	-
	10% EV penetration by 2040	-	-	116.54 Mt CO2e 8.22%
Utilities & End use	Power Sector Efficiency	4.34 Mt CO2e 27.95%	7.53 Mt CO2e 27.95%	54.03 Mt CO2e 27.95%

Residential

In 2018, the residential sector accounted for the third largest share of total energy consumption across the economy, at 21.9% of the country's total energy consumption. Despite this, the rate of increase in energy consumption has been moderate compared to other sectors like industry and transport, having only grown by 17% from 2013 to 2018. The growth in energy consumption in the residential sector has mostly been attributed to the increased use of electricity and LPG. In December 2016, around 90.7% of households (20.6 million) had access to electricity, which was up from around 87%, or around 16 million, in 2013. Increasing electrification rates and increasing incomes are also likely to have contributed to the higher demand for electricity.[5] Residential energy consumption in the Philippines is made up of three sub-sectors: space cooling and refrigeration (56% of consumption), appliances (18%), and lighting (11%)[6].

[5] Energy Demand and Supply Outlook (2018-2040), DOE, 2018
[6] EU Switch, policy review

Key Policies and Strategies

The DOE has pursued a suite of initiatives that have targeted residential buildings, as well as domestic appliances. Two key programs that have been running for several years are the PELP which encompasses household appliances, and through the Philippine Energy Efficiency Project (PEEP), the Nationwide Residential Lighting Programs (NRLP).

As part of the initial energy labelling initiatives, the DOE has developed MEPP requirements for room air-conditioning units, refrigerators, television sets, and a range of lights. The program is set to be extended to cover other household appliances, including electric fans and washing machines. While such an initiative was already underway prior to the enactment of the EEC Act, the Act specified additional information to be included on labels, pushing back the launch date for the labels. It is expected that they will be launched imminently.

The Government is keen to boost the level of local manufacturing, as so many appliances are currently imported. Illegal importing of sub-standard products without labels have been cited as a key challenge in this area. Furthermore, industry representatives have concerns about the additional costs that energy performance testing will impose on local manufacturers and importers.

Despite the prevalence of poorly insulated residential buildings in the Philippines, there has been limited work done to support the uptake of building envelope measures to date. Although Building Envelope Measures: Cool Roofs and Insulation, is set out in the current Roadmap as a short-term priority for DOE, little progress on this initiative has been made. While building envelope measures are addressed in the Guidelines on the Energy Conserving Design for Buildings, the Guidelines are not intended to address residential buildings. It is, however and remains a longer-term strategy of the DOE for such Guidelines to include residential buildings. The Guidelines themselves are intended to be incorporated into the Building Code, which is updated by the DPWH.

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Residential	**MEPPs**	**18.56 Mt CO2e 34.65%**	**32.79 Mt CO2e 31.66%**	**248.21 Mt CO2e 23.17%**

Commercial

Strong growth in building and construction of commercial buildings is expected to continue, driven by continued economic growth, and government priorities for inward investment. In the Philippines Energy Plan (2018-2040), the commercial/services sectors are expected to rise from 4,670 kTOE in 2018 to 14,070 kTOE in 2040, with electricity supply making up more than half of that energy demand. Commercial buildings in the Philippines account for a large proportion of this consumption of electricity; these buildings including offices, hotels, and shopping malls. Tourism in the Philippines has grown, resulting in more and bigger hotels, and there has also been an increasing trend towards the use of commercial buildings over longer hours to support different energy uses such as for IT and data center management.

Key Policies and Strategies

The EEC Act includes reporting obligations for Type 1 and Type 2 DEs. The measurement, testing, and verification of energy use will bring new challenges for buildings. This is a substantive body of work that will require stronger benchmarking of energy use in commercial (and residential) buildings, an enforcement regime, and reinvigorated coordination mechanisms between DOE and DPWH as the agency responsible for building codes. Currently, the Guidelines on the Energy Conserving Design for Buildings have been adopted in 2020. These Guidelines are intended by the DOE to be incorporated into the Building Code, which is updated by the DPWH.

The DOE shall develop a Building Energy Labeling System (BELS), which looks to accelerate the use of efficient technologies and measures in building design (including roofs, insulation, etc.) to reduce energy consumption. The BEL System will also make benchmarking and monitoring of energy consumption of buildings easier.

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Commercial	**MEPPs**	**7.51 Mt CO2e 16.15%**	**13.28 Mt CO2e 15.81%**	**100.50 Mt CO2e 14.48%**

Government

Key Policies and Strategies

Recognizing its need to improve energy efficiency, the government has issued orders and circulars requiring the entire public sector to reduce energy consumption by at least 10%. Under the NEECP, the GEMP was established to help reach this goal. According to the DOE, based on over 590 government agency reports that were submitted since the establishment of the NEECP and GEMP in 2005, significant savings have been achieved across the public sector through energy-saving initiatives.

The DOE has recognized the opportunity for it to act as a market leader and aims to share lessons from its experience with public sector buildings, particularly through the roll-out of demonstration programs. An example of this is in the retrofit of around 150 government buildings with energy-efficient lighting, with support from the ADB. One of the key objectives of this was to demonstrate the return on investment of such retrofits for commercial entities. The DOE has also been able to develop and test monitoring and reporting mechanisms through the GEMP, the lessons of which will be applied to the development of guidelines and templates for reporting (as required in the EEC Act) across all sectors.

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Government	**GEMP**	**1.87 Mt CO2e 16.15%**	**3.31 Mt CO2e 15.81%**	**25.06 Mt CO2e 14.48%**

Industry

The industrial sector is the second biggest energy consumer in the Philippines, accounting for 25% of final energy consumption. Energy consumption in the sector is also increasing rapidly; industrial energy consumption rose from 25% between 2013 and 2018, from 6,439 KTE to 7630 KTOE . This represents a slight dip of 401 KTOE from 2017.

The subsectors with the highest energy consumption are non-metallic minerals (cement), followed by food and beverage. The cement production process requires a large amount of electrical and thermal energy, and cement factories are amongst the highest consumers of coal. Consumption in this sector is likely to continue to rapidly increase, with strong economic growth forecasts, population growth and urbanization trends likely to continue, and the government's pursuit of its aggressive infrastructure building goals. According to the DOE's Energy Demand and Supply Outlook (2018), industry will consume 26,300 KTOE of energy in 2040.

Key Policies and Strategies

Recognizing the need to curb emissions and improve energy efficiency in the sector, the government has prioritized several key policies and Program in the sector through the roadmap (2023-2050). In the Philippines mandatory MEPP are already being applied to room air conditioners, refrigerators, and lighting (CFLs and LFLs), with the development and adoption of MEPP for electric motors soon to follow. The new EEC Act mandates that MEPP are developed, adopted, and enforced in the industrial sector (in addition to commercial and transport). Yet, however, there are no MEPP, nor any guidelines on their adoption, or monitoring, verification, and evaluation frameworks in place in relation to distribution transformers and electric motors. No schedule is yet available on when these MEPP might be adopted.

The GEF-funded UNIDO projects, the Philippine Industrial Energy Efficiency Project (PIEEP) provided trainings on Energy Management System and Systems Optimization as well as capacity building on financing schemes. Trainings were offered to plant facility engineers and manager, individual consultants, energy efficient product suppliers and vendors, individual service provider engineers, among others. Walk-through plant assessment and audits were conducted to help energy efficiency project identification. Implementing Energy Management Systems were promoted with the intention of having them be included in any corporate management guidelines, rules, and policies of target companies.

The EEC Act defines and sets out the obligations of designated enterprises to implement energy management systems (ISO 50001 or similar). They are also required to submit energy consumption reports, conduct energy audits, and appoint certified energy managers or certified energy conservation officers depending on the type of establishment.

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Industry	**MEPPs (motors)**	**17.43 Mt CO2e 19.38%**	**30.81 Mt CO2e 19.17%**	**233.18 Mt CO2e 18.35%**

Transport

The industrial sector is the second biggest energy consumer in the Philippines, accounting for 25% of final energy consumption. Energy consumption in the sector is also increasing rapidly; industrial energy consumption rose from 25% between 2013 and 2018, from 6,439 KTE to 7630 KTOE. This represents a slight dip of 401 KTOE from 2017.

There are various forms of transport, with varying levels of energy demand. Land transport services in the city are mainly in the forms of jeepney, tricycle, pedicab, bus, taxi, Light Railway Transit (LRT 1 & 2), Metro Rail Transit (MRT 3), and Philippine National Railways (PNR). Based on the DOE's Energy Demand and Supply Outlook (2018), road transport demand accounts for 88% of the energy demand in the sector. Water transport accounts for 6.9% of energy use, domestic air transport for 4.8% and railways for 0.1%.

According to the DOE's Energy Demand and Supply Outlook (2018), the demand for energy in the transport sector is expected to grow to 36,200 KTOE in 2040. It is expected that road transport will still account for the main share of this demand, as majority of domestic traffic and freight traffic is by land.

Key Policies and Strategies

Most transport policy decisions lie with DOTr and other urban development agencies, though there is some overlap in roles and responsibilities of different departments and agencies. Historically DOE has had influence in standards setting for fuel efficiency for motor vehicles, and has collaborated with DOTr in some Program, however the passing of the EEC Act now mandates coordination between the two departments. The EEC Act requires DOTr work with both DOE and the DENR to ensure compliance of vehicle owners, manufacturers, and importers with the MEPP standards for transport vehicles. DOTr is also required to help enforce compliance with this and the requirement for vehicles to display energy consumption labels. At the time of writing, a Department Circular entitled Prescribing the Policy Framework for the Development of the Fuel Economy Rating, Fuel Economy Performance, and Related Energy Efficiency and Conservation Policies for the Transport Sector and Other Support Infrastructures, was in draft.

Prior to the passing of the Act, several energy efficiency initiatives had been pursued by DOE in the sector. These include the Fuel Conservation and Efficiency in Road Transport (FCERT) programs, involving publicity campaigns promoting the conservation of transport fuels. 3,000 e-trike (electric tricycle) units were deployed under the Market Transformation through the Introduction of Energy Efficient Electric Vehicles Project, which had some support from ADB. At the time of writing, the DOE had signed four Memoranda of Agreement with LGUs and 36 Deeds of Donations with non-government organizations to extend this Programs. Under the Next Generation Vehicle Package initiative, the DOE has been working with the Japanese Government, to promote hybrid electric vehicle uptake through demonstration of advanced Japanese vehicles. In mid-2019, under "The Natural Gas Vehicle Programs for Public transport" which looks at the conversion of the bus fleet to compressed natural gas, DOE has issued Department Order (DO) No. 2019-07-0015 titled, Creation of the Special Financial Audit Team for the Alternative Fuels Fund (AFF). Recently, DOE has issued a Code of Conduct for the use of LPG and working with UNEP and UNDP on developing policies and Program related to E-mobility and EV infrastructure. The DOE continues to roll out information and awareness-raising campaigns, having conducted more than 40 IECs between 2018 and 2019 related to transport, including fuel economy, driver awareness and demonstration of key technologies.

Other areas of priority for the DOE include tax incentives for hybrid and electric vehicles, solar-assisted electric-powered boats particularly for tourism, EV infrastructure and research and development on emerging energy technologies. The DOE has provided inputs on the issue of tax incentives for EVs, for the implementing rules and regulations for the Tax Reform for Acceleration and Inclusion (TRAIN) Act and has entered MOAs related to these other areas.

Recently, the EVCS bill was published which aims to promote the use of electric vehicles, EE and reduce reliance on imported fuel. Under the bill, DOE is responsible for promoting the adoption of EVs, the development of charging infrastructure, harmonizing policies, and issuing regulations on the use of charging stations in coordination with other agencies. The EVCS Bill is already a policy under DC2021-07-0023 OR "Providing for a policy framework on the Guidelines for the Development, Establishment, and Operation of Electric Vehicle Charging Stations (EVCS) in the Philippines" or "Electric Vehicle Charging Stations Policy Guidelines".

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Transport	Fuel Efficiency Standards	-	-	-
	10% EV penetration by 2040	-	-	116.54 Mt CO2e 8.22%

Utilities and End-Use

The industrial sector is the second biggest energy consumer in the Philippines, accounting for 25% of final energy consumption. Energy consumption in the sector is also increasing rapidly; industrial energy consumption rose from 25% between 2013 and 2018, from 6,439 KTE to 7630 KTOE. This represents a slight dip of 401 KTOE from 2017.

Key Policies and Strategies: Demand-side Management and Power Sector Efficiency

The responsibility of every utility to develop and implement DSM plans is provided for under Section 4 of the Framework for Demand-side Management in the Philippines issued by the Energy Regulatory Board (ERB)[7], which outlines the main roles and responsibilities of DOE, ERB, utilities and consumers of electricity. It is aimed at the electric utilities' activities designed to encourage and influence their customers' use of electricity in ways that will produce desired changes to both the timing and level of electricity demand or load shapes.

As mandated by the EEC Act, DOE, with the assistance of the Energy Regulatory Commission and the Philippine Economic Zone Authority, shall pursue a demand-side management Programs for the electric power industry for the reduction of energy consumption through effective load management. This will aim to decrease power demand and achieve the migration of power demand from peak to off-peak periods. This will also include measures undertaken by distribution utilities to encourage end users to manage their loads.

Sector Targets

Sector	Programs	Short Term Emissions Savings (2023 – 2024)	Medium Term Emissions Savings (2025 – 2028)	Long Term Emissions Savings (2029 – 2050)
Utilities & End use	Power Sector Efficiency	4.34 Mt CO2e 27.95%	7.53 Mt CO2e 27.95%	54.03 Mt CO2e 27.95%

Cross-Sector

There are several key themes that are fundamental to the success of energy efficiency and conservation Program and strategic actions in all sectors. Finance Program support more effective use of public funding and support a private sector supply of finance for energy efficiency investments in all sectors. Educating and informing public sector bodies, financial institutions, industry groups, and the public at large enhance understanding of the importance of energy efficiency and the actions that consumers can take to improve it. Gathering data and evaluating progress of energy efficiency Program and actions in the Roadmap will be essential to gauge whether these are successful, and if not, where lessons can be learned and improvements made. Gender and Development (GAD) is mandated to be a fundamental consideration of any government energy efficiency and conservation projects, and this should follow in the private sector. Incorporating GAD into Program across all sectors could have significant positive

[7] Philippines Framework for Demand-Side Management In The Philippines (Appendix B). Accessible from https://www.raponline.org/wp-content/uploads/2016/05/phenergyregulatorycommission-dsmproposalappbdraft-caseno2001-55-2001-10-26.pdf

effects, not only on gender equality but in poverty alleviation and the strength of the MSMEs sub-sector. Finally, with energy efficient products rapidly replacing inefficient models, the DOE has made it a priority to address the management of such waste.

Key Policies and Strategies: Energy Service Company (ESCO)

An ESCO, or Energy Service Company, is a business that develops, installs, and arranges financing for projects designed to improve the energy efficiency and maintenance costs for facilities. ESCOs provide much needed power engineering expertise, enabling power investors to concentrate more on their core business. The ESCOs also assist in budget stabilization, reducing risks in the market while implementing energy efficiency improvements.

Up until the EEC Act and the release of Department Circular 2020-09-0018, ESCOs were not covered an accredited system. The Department Circular outlines the "certification requirements, review and evaluation process, and the classification of ESCOs, and states that ESCOs applying for certification must demonstrate their technical and managerial competence to design and implement energy efficiency projects, including energy audits, design engineering, providing or arranging project financing, construction management, operations and maintenance of energy efficient technologies, and verifying energy savings".

Key Policies and Strategies: Finance

Financing is a cross-cutting theme crucial to incentivize the uptake of energy efficiency projects, and is considered one of the most important factors in accelerating the global deployment of energy efficiency. A projected requirement of US$ 550 billion per year by 2035 is needed globally to unlock the potential of EE and its benefits[8].

The shift from voluntary to mandated activity through the EEC Act, through the introduction of fines as well as incentives, is likely to have significant impact on EE action. This change also gives investors a clear indication of the government's commitment to scaling up energy efficiency across all sectors.

The two tables below show existing energy efficiency financing Program and strategies, and finance provisions under the EEC Roadmap 2017-2040 and EEC Act, respectively.

Table 7: EE Finance Program and Strategies in the EEC Roadmap 2023-2050

Policy, Programs, or Strategy	Description	Implementation
Collaboration with Stakeholders for Expanded Financing Models for EEC Projects	Included in the EEC Roadmap 2017-2040, this involves looking to international climate finance, government and leveraged loan finance, fund guarantees for risk sharing, fiscal policies in the forms of tax incentives and rebates, government grants and public-private finance from Energy Services Companies (ESCOs). In the EU Switch EEC Action Plan 2016- 2020, there were 3 particular elements suggested under CS-B: Energy Efficiency Revolving Fund and Finance Sector Capacity Building Programs: (1) Establish an EE revolving fund; (2) Create an EE finance programs for the commercial bank sector; and (3) Coordinate an EE finance training programs	There has been some limited collaboration with FIs such as DBP, LBP and the Bank of Philippine Islands (BPI) to explore these financing initiatives for EE. Under the UNIDO Philippines Industrial Energy Efficiency Project 2012-2019, the DOE conducted a workshop entitled 'Financing Capacity Development' targeting FIs, ESCOs, EE suppliers and vendors, as well as business and industry. No specific Programs plans from the list of recommendations has been developed or tested with stakeholders.
Fiscal Incentives	Before the EEC Act (discussed in the next table), the DOE had no direct mandate to provide financial incentives for EE. Through the	Before the Act came into effect, fiscal incentives were not widely taken up, and the means by which organizations could

[8] IEA (2014), World Energy Investment Outlook: Special Report. Available from: https://www.ourenergypolicy.org/wp-content/uploads/2014/06/WEIO2014.pdf

	Department of Trade and Industry's Board of Investments (DTI-BOI), the investment priority plan had allowed for financial incentives for energy efficiency upgrades (duty free importation of equipment and tax holidays on EE project revenues).	apply for these incentives were not clear. It was a recommendation of the EU-Switch Action Plan to raise awareness and clarify eligibility and the application process for these incentives.
IFC Sustainable Finance Programs	This Programs looked to address the barriers to EE finance, as well as those faced by renewable energy projects. It supported the development of new products and built capacity around assessing risks of loan applications. The banks involved in this Programs included the two largest in the Philippines, BPI and Banco De Or as well as the Metro Bank and Trust Company	The project closed in June 2017. The value of loans to EE projects was significantly lower when compared with renewable energy projects. It was reflected that the level of expertise in energy efficiency within the private sector has not been sufficiently developed. Despite funding a number of successful projects and a resultant portfolio of approx. US$300m, it has not created significant change in energy efficiency uptake. The average deal size remains in the $2-3m range. A range of recommendations were made by the International Finance Corporation at the conclusion of the Programs, notably for increasing the capacity of FIs in the assessment of EE projects.

Table 8: Fiscal Incentives and Energy Efficiency Finance Provisions in the EEC Act

Policy, Programs, or Strategy	Description	Implementation
Fiscal Incentives	Section 25 of the Act, and 71 of the IRRs stipulates that energy efficiency projects (certified by DOE) will be entitled to fiscal incentives in the form of tax benefits or tax holidays. The implication of the exemption under the Act from Article 32(1) of Executive Order No. 226 is that the incentives are open to foreign entities, encouraging foreign investment in energy efficiency	The Department of Finance (DOF) is required to, in coordination with the DOE, draw up appropriate mechanisms to implement the fiscal incentives under the Act. A Department Circular is due to be published on the Guidelines for the Endorsement of Energy Efficiency and Conservation Projects to the Board of Investments for Fiscal Incentives.
Concessional lending by GFIs	Under Section 6 of the Act, *Roles of Other Government Agencies,* GFIs are obligated to set aside lending funds for EE projects at concessional rates of interest to attract private sector investments. Compatible guarantee or insurance products are required to be made available in order to help mitigate credit risks associated with energy efficiency investments in small and medium-sized enterprises. The same applies to performance risks for projects developed by, engineering companies, and other technology providers.	Guidelines for the endorsement of projects for government financial institutions are in the process of being developed with the support of LCEP. The DOE will soon develop the proposed Department Circular to issue modalities on financial arrangements for government EEC projects.

Further to the above, both the LandBank of Philippines (LBP) and DBP have their own existing lending Program for energy efficiency projects. LBP's Programs, called the Go Green Inclusive Finance for SMEs and LGUs ('Go Green'), offers loans to both EE and renewable energy projects, while the DBP's Energy Efficiency Savings Financing Programs ('E2SAVE') offers loans primarily for energy efficiency projects.

Key Policies and Strategies: Data and MVE

Accurate, timely and reliable data is fundamental to developing effective energy efficiency strategy and policy and plays a key role in implementation. It is critical to reducing the cost of monitoring and verification. It also supports awareness raising of the positive impacts of energy efficiency action. Robust and comprehensive databases, combined with stable and enforceable data collection regimes and effective evaluation methods, support the development of an evidence base. They provide valuable insights into how energy is used, the drivers of consumption, and the impact of energy efficiency measures so that policymakers can better adapt and design their Program to maximize their impact.

Historically, data and MVE systems have not been consistent or reliable across the board. For instance, there had been limited up-to-date data available on public sector energy consumption in Philippines and limited information on the total number of public sector buildings and facilities in the country.

Key Policies and Strategies: Information, Education, and Communication (IEC) Campaign

The aim of this Programs is the integration and mainstreaming of energy efficiency across all sectors, including in LGUs. The DOE has collaborated with two other government agencies on this Programs, the Philippine Information Agency (PIA), and the Development Academy of the Philippines (DAP). This has involved convening several forums, workshops, and seminars. These events have been attended by representatives from the private sector, local government and other public officials, industry associations and academia, as well as interested members of the public. Several initiatives have targeted LGUs and, in the last couple of years, workshops have been held to support local government to develop energy efficiency Program for integration into Local Development Plans.

The DOE conducts IEC campaigns on energy efficiency and conservation through E-Power Mo. The E-Power Mo is the DOE's vehicle to empower energy consumers and inform the public on available options for a wiser and more intelligent/sustainable use of energy. Nationwide, 51 IEC events took place with the theme "Energy Efficiency and Conservation".

Key Policies and Strategies: Gender Equality and Development (GAD)

Energy efficiency investments create public benefits in terms of lower greenhouse gas emissions, increased employment, energy security and improvement of the country, or communities fiscal balance. Energy efficiency is strongly linked to the Sustainable Development Goals through its economic, environmental, and social dimensions. Sustainable energy is addressed specifically in Goal 7, which is to "ensure access to affordable, reliable, sustainable and modern energy for all". However, access to, and use of energy is unevenly distributed among difference socio-economic groups. Similarly, the benefits arising from energy efficiency can accrue in such a way that some parts of society miss out.

The DOE has targeted certain groups through its Program and strategies to ensure that they are able to benefit from energy efficiency, specifically low-income households, and women.

The Philippine Commission on Women (PCW), Office of the President, issued a Memorandum Circular No. 2011-01 which provides guidelines for the 'Creation, Strengthening, and Institutionalization of the Gender and Development Focal Point Systems. The DOE issued a Special Order to reflect these systems in the Department. In 2019, a Department Order provided for the Reconstitution of the DoE Gender and Development Focal Point System, in line with the Implementing Rules and Regulation on Gender and Development.

Key Policies and Strategies: Waste

While not directly contributing to energy efficiency, waste is a key issue emerging within the space. An increased roll out of more efficient technologies to replace older and obsolete technologies will lead to increased waste, (specifically referred to electronic-waste, or e-waste)

generation and greater need for waste management. This would include recycling and circular economy strategies and capacities.

Most e-waste is handled by the informal sector such as waste pickers, and junkshop operators and a formal and comprehensive e-waste management system is still lacking in the country. In the 17th Congress, there are two bills filed to address e-waste management. The first bill is Senate Bill No. 568 (E-waste and Cellular Phone Recycling Act) authored by Sen. Antonio Trillanes and House Bill No. 5901 (E-waste Management Act)[9]. DENR and DOE had also released a Joint Administrative Order on Lamp Waste Management (JAO No. 2013-09-2001) to address the end-of-life disposal of lighting products and control the dispersion of toxic substances into the environment.

As of October 2020, DENR was set to issue a document of the Technical Guidelines on the Environmentally Sound Management of waste electrical and electronic equipment (WEEE) which aims to "provide the framework mechanism for the appropriate management of WEEE, reduce the amount of electrical and electronic equipment (EEE) type of waste and the hazards brought about by its components, and promote the reuse of second-hand or used EEE and valorization of its waste component"[10].

NEECP Implementation Risk

The following table presents various risks that have been identified through the development of the NEECP. These risks may hinder the implementation of the NEECP and thus the targets of EEC. These identified risks have been scored according to likelihood (risk rating) and severity (impact rating), on a scale of low, medium, and high. Alongside each risk, mitigation actions have also been identified, and the responsible party for managing the risks/undertaking appropriate mitigation action.

Table 9: Suggested Risk Matrix of the NEECP

Identified risk	Risk rating	Impacts	Impact rating	Mitigation action	Responsibility
Inadequate financing	**High**	No budget set aside for investing in EE projects	**High**	Inclusion of budget of EE projects/activities within the investment plan	DOE, DBM, DOF
Operation Risk: Human resource	**Medium**	Lack of adequate capacity at DOE	**Medium**	Recruit and retain skilled staff, capacity building	DOE
Lack of data	**Medium**	Target-setting inaccuracies	**High**	Develop databases and systems of monitoring/data collection	DOE
Lack of coordination between stakeholders	**Low**	Low stakeholder understanding and involvement in NEECP implementation	**Medium**	Regular coordination meetings/stakeholder engagements	All parties
Political Risk	**Low**	Delay or no follow-through of the NEECP, change in ministries and roles	**High**	NEECP has been embedded in as a national law (EEC Act)	DOE

[9] Celestial, R.G.A *et al*., (2018). E-waste Management in Philippines (2018). Accessible from https://www.researchgate.net/publication/323356709_E-waste_management_in_the_Philippines
[10] DENR (2020). EMB: National Policy, Regulatory Framework Already In Place For E-Waste Mngt. Accessible from https://www.denr.gov.ph/index.php/news-events/press-releases/1918-emb-national-policy-regulatory-framework-already-in-place-for-e-waste-mngt

Sectoral and Cross-Sectoral Program

This section describes the status of various key Program under the Roadmap 2023-2050, both sector-specific and cross-cutting ones.

Government Energy Management Program (GEMP)

Recognizing its need to improve energy efficiency, the government has issued orders and circulars requiring the entire public sector to reduce energy consumption by at least 10%. Under the NEECP, the Government Energy Management Programs was established to help reach this goal. The GEMP is the government-wide Programs to reduce monthly consumption of electricity and fuel through energy efficiency and conservation measures, and the GEMP requires establishment of energy conservation program and dedicated staff for each agency. DOE conducts awareness raising for government agencies, conducts spot checks on agencies for compliance with the requirements, and recognizes good performers.

According to the DOE, based on over 590 government agency reports that were submitted since the establishment of the NEECP and GEMP in 2005, significant savings have been achieved across the public sector through energy saving initiatives.

According to the Roadmap 2023-2050, GEMP will run through the short, medium- and long-term. To effectively build up a pipeline of GEMP projects, at both the national and Local Government Unit (LGU) level, the DOE aims to build the capacity of, and promote better coordination between, government entities. Specifically, capacity building of the IAEECC who evaluate and approve the development of GEMP will take place in the short-term. LGUs will similarly receive support for the identification and evaluation of energy efficiency projects, coordinated by the National Energy Efficiency and Conservation Office (NEEC Office), shortly to be established.

Buildings

The building sector is a one of the most energy-intensive sectors of the country. First completed in 2008, the Guidelines on the Energy Conserving Design for Buildings aim to encourage and promote the energy conserving design of buildings to reduce use of energy and prescribe guidelines and minimum requirements for the energy conserving design of new buildings and provide methods for compliance. It is intended that the guidelines would be used to update of the Building Energy Efficiency Code (BEEC), which will form part of the Philippine Building Code.

Currently under revision the new *Guidelines on the Energy Conserving Design for Buildings*, will be, in accordance with the EEC law, mandatory for both new and existing buildings. State-owned buildings and facilities are required to comply, in accordance with the GEMP.

Philippine Energy Labeling Program/Minimum Energy Performance for Products

The Philippine Energy Labelling Programs is a large program that has been undergoing phase-by-phase implementation since 2020. The Programs mainly covers the labelling of appliances and other energy consuming products. Currently, the PELP covers room air conditioners, refrigerating appliances, televisions sets, and lighting products.

The development and rollout of energy performance requirements beyond the appliances sector remains a high priority for the DOE. These include technologies and industrial devices such as motors, and possibly transformers, which is widespread in use and energy consuming. Minimum fuel efficiency ratings and labelling for vehicles also fall under the PELP.

The updated Roadmap highlights the necessary actions to expand the PELP product/technology coverage, through the conduct of market assessment studies, establishing and harmonizing standards in collaboration with experts and ASEAN countries respectively. Supporting measures to the PELP include a robust online registration system, a Monitoring, Verification and Evaluation (MV&E) framework.

Demand-Side Management

The development of a demand-side management (DSM) Programs is a requirement the EEC Act. A DSM Programs for the electric power industry would be pursued through load management and other measures implemented by distribution utilities to encourage end-users to manage their loads in an efficient manner. DSM adds system stability and reliability by paying users to voluntarily lower their demand during peak periods of high demand. A policy would first need to be developed and a strategy adopted by scoping out best practices in DSM and conducting extensive stakeholder engagements. The strategy would also identify industries and sectors which the Programs should target to be most effective (e.g., industry, commercial, residential).

Power Sector Efficiency

This strategic action was included in a draft Roadmap presented for public consultation on 24th August 2020 by the DOE. This should be strongly linked to the DSM policy and follow the DSM Programs, and the strategy would set out and prioritize e cost-effective opportunities to reduce system losses and improve efficiencies and detail potential for cost-savings. Included in the previous Roadmap 2017-2040 as a medium-term priority, it remains a high priority for the DOE to be pursued within the next five years.

Philippine Transport Vehicles Fuel Economy Labeling Program (VFELP)

With the expansion and amendment of the PELP coverage as indicated in DC2022-11-0035 and the requirement for fuel economy performance labelling under Section 17 of the EEC Act, the government's initiative on energy efficiency and conservation policies for the Transport Sector entails the development of the Philippine Transport Vehicles Fuel Economy Labeling Program. The program covers the fuel economy performance rating for the transport sector which will initially cover road transport vehicles. This initiative is addressed in the EEC under Section 17, Section 2 of DC2020-10-0023, Sections 58 and 60 of DC2019-11-0014 which requires that transport vehicle manufacturers, importers, distributors, dealers, and rebuilders shall comply with the vehicle fuel economy labeling requirements set by the DOE with the assistance of the DOTr, DENR, and other concerned agencies. As part of this, the DOE will develop the necessary technical requirements, including but not limited to, implementing guidelines, vehicle fuel economy performance testing guidelines, and minimum energy performance for transport vehicles

Energy Service Company (ESCO)

ESCOs support the development of industrial energy efficiency projects, particularly as financial intermediaries who can create new financing pathways for projects in industry, the commercial sector, and public sector.

The capabilities of the ESCOs accredited under the DOE have varied widely. Before the passing of the EEC Act into law, there had been limited development of the ESCO sector. The Act provides that the DOE shall strengthen the existing ESCO certification system and develop guidelines and procedures on the imposition and collection fees for accreditation and certification services.

In line with the release of the Department Circular No. DC2020-09-0018, and as outlined in the Roadmap 2023-2050 as a short-term strategic action, ESCOs require increased capacity building to undertake and implement EE projects. This would involve development of training modules, provision of an ESCO toolkit supporting standard processes to streamline procedures.

Finance

To achieve the wider ambitions of the EEC Act, significant investment is needed for the successful implementation of EE projects in the Philippines. However, financial, and technical barriers are constraining the financing of EE projects, and it is therefore not happening at the rate that is needed. There is a lack of commercially attractive EE financing due to traditional asset-based lending practices of financial institutions (FIs). Restrictive loan terms and high collateral requirements mean that local FIs do not receive many requests for EE financing despite funding being available, and further options need to be explored to scale the funding needed to catalyze the EE market in Philippines. There is also

insufficient knowledge of the needs and benefits of EE, and limited technical capacity in businesses, government entities and FIs to either develop or assess viable EE projects, contributing to the lack of uptake in EE financing.

In the short term, the Roadmap 2023-2024 outlines financial sector capacity buildings to increase FIs understanding with EE projects and the business models. Scoping of new financial modalities, such as a revolving fund and a guarantee fund, is also key to expand the range of EE finance instruments.

Data and Monitoring, Verification, and Enforcement (MVE)

Given the paramount importance of data and a system of monitoring and verification, the Roadmap 2023-2050 recognizes the importance of data and has prioritized this in the short and long-term time horizons. It is key to quickly establish to collect data and implement MVE frameworks through which all other EEC Program and initiatives under the EEC Act can be created and be informed by. In the long term, an EEC knowledge management system shall be institutionalize, which is in the conduct of IEC campaigns/materials, Programs implementation, policy/regulatory improvements, ease of data accessibility, and more.

Information, Education, and Communication (IEC) Campaign

The Roadmap 2023-2050 outlines IECs as an ongoing priority for DOE in the short term, which includes the development of IEC Program, inculcation of EEC within schools and university, and recognition awards meant to incentivize individuals and companies.

Gender and Development (GAD)

The development and implementation of Program specifically designed to target low-income households was prioritized for the Medium Term (2025-2028).

The Roadmap 2023-2050 now includes the GAD strategy development and identification of opportunities for mainstreaming GESI in EEC as a priority in the short and medium term. The Act provides that GFIs lend at concessional rates and have compatible guarantee and insurance products available to mitigate the credit risks faced by SMEs, and the DOE recognizes SMEs as a potential target group for support through various Program. It recognizes the need to address issues of gender equality and inclusivity, including targeting low-income households through its Program.

Waste

Waste management in relation to energy efficiency equipment (and the disposal of inefficient and obsolete products) has not historically been pursued by the DOE. It is newly included as a priority through the provision of Section 28 of the EEC Act: Waste Management, Recycling and Disposal Guidelines.

The Act states that DENR, in coordination with the DOE and the DILG, will establish guidelines for the accurate characterization of wastes arising from energy-consuming devices, equipment, fixtures, and other relevant items, including end-of-life vehicles and their component parts. These guidelines shall include appropriate containment features and management measures for hazardous wastes.

A Waste Management Collection, Recycling and Disposal Strategy (WMCRDS) shall also be developed by the DOE, the DENR, and the DILG for wastes covered by this Act to ensure that these are managed and disposed properly to prevent impacts on the environment.

Energy Efficiency and Conservation Roadmap (2023-2050)

Strategic Actions, Descriptions, and Activities

Introduction

Energy demand

The Philippines has witnessed a rise in energy consumption, driven by economic growth and a growing population in recent years. These trends are set to continue, with the transport and industrial sectors particularly driving the increase in energy demand. Although the Philippines continues to perform well compared to its ASEAN neighbors in terms of energy intensity (this has been attributed, at least in part to high, un-subsidized energy prices and a shift towards service and commercial industries), the rate of decline in energy intensity is slowing. Continued growth in GDP (it has been averaging 6-7% annually over the past decade), and the energy-intensive industrial, building/construction, and transport sectors will see an acceleration in energy demand in the Philippines. The growth in the industrial sector is expected to grow the fastest at an annual average of 5.4%, driven in part by further governmental programs aimed to boost developments in the manufacturing sector, and the 2018 'Build, Build, Build' initiative which will have a strong influence on further growth in the construction industry.

Drivers of energy efficiency

The Philippines has among the highest energy prices in Asia. Reducing energy costs through the implementation of energy efficient products has the potential to free up capital, which businesses can use to further grow their organization and stimulate wider economic development. Reducing energy costs in households would enable increased spending on other basic needs, thereby improving conditions for low-income and vulnerable groups.

Energy security and self-sufficiency is also a high priority in the Philippines. As a net energy importer with only moderate conventional energy resources available, a lessened reliance on energy imports is a further driver for energy efficiency.

Alongside the economic benefits, there are important environmental and sustainable development considerations. Energy efficiency plays an important role in decoupling economic growth from energy demand and emissions, making it critical for reducing air pollution, and for emissions reductions - supporting the country to meet its NDC commitments.

The Department of Energy's Commitment to Energy Efficiency and Conservation

The Philippines has a strong history of commitments to energy efficiency, dating back to the early 1990s. The Department of Energy Act of 1992 (Republic Act 7638) made explicit the aim for "judicious and efficiency utilization of energy" across energy intensive sectors. In 2004, the National Energy Efficiency Conservation Program was adopted, which served as the framework guiding DoE strategy in energy efficiency across all sectors.

In recent years, the Department of Energy (DOE) has been guided by the Energy Efficiency and Conservation Roadmap 2017-40, which sets out a comprehensive list of sectoral strategies to promote energy efficiency.

Until 2019, energy efficiency activities had generally been voluntary, with few incentives to support widespread adoption. In early 2019, the long-awaited Energy Efficiency and Conservation Act was enacted, putting in place the country's first law specifically relating to energy efficiency. The shift from voluntary to mandated activity, through the introduction of fines as well as incentives, is likely to have significant impact on energy efficiency action. This change also gives investors a clear indication of the government's commitment to scaling up energy efficiency across all sectors.

While the passing of the Law is a huge step forward for the Philippines Government and DOE, there is still much work to be done to implement its provisions. It is critical that comprehensive, clear and appropriate strategies and plans are developed to accelerate implementation and build investor confidence in the energy efficiency market.

The Energy Efficiency and Conservation Roadmap 2023-2050

To help accelerate energy efficiency activities and investments in the Philippines across all sectors, the existing Philippines Energy Efficiency and Conservation (EEC) Roadmap (2017-2040) is being revised.

The revised Philippines Energy Efficiency and Conservation Roadmap (2023-2050) (the Roadmap) will provide an updated outline of the strategic plans and actions for EEC in the Philippines across all sectors, including implementing key provisions of the recent Energy Efficiency and Conservation Act (EEC Act), and its accompanying Implementing Rules and Regulations (IRRs).

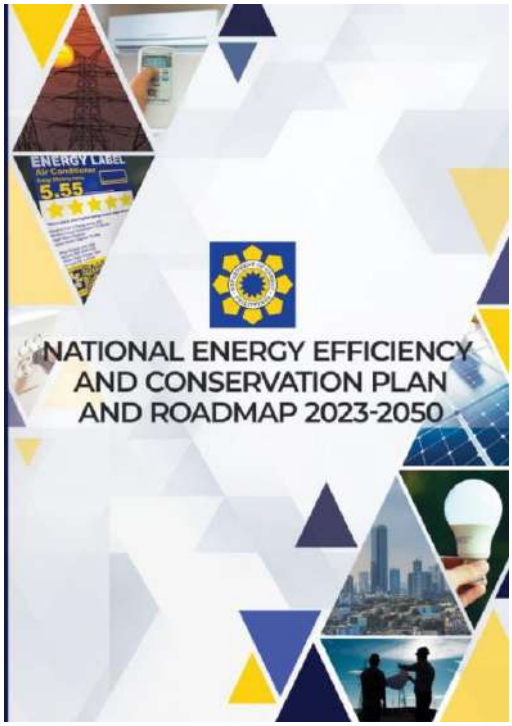


Figure 9. NEECP and Roadmap Cover Page

Purpose of this report

The strategic actions and their associated activities and milestones in the Roadmap will also form part of the National Energy Efficiency and Conservation Plan (NEECP), a "national comprehensive framework", required to be developed by the DOE under the EEC Act (2019). Along with setting out a governance structure, the NEECP is to include energy efficiency programs, complete with feasible strategies, national targets, and monitoring and evaluation requirements.

Intended use of the document

The Roadmap is intended to support the DOE in implementing key provisions of the EEC Act and to accelerate the uptake of energy efficiency measures in the Philippines. The finalized Roadmap will be a public-facing document and will set out the Government's priorities and commitments on energy efficiency, communicating them to private sector investors, international development organizations, and the Filipino public.

Approach

The recommendations on the strategic actions to be included in the Roadmap have been developed in collaboration with the DOE. The approach is illustrated below:

Figure 10. NEECP and Roadmap 2023-2050 Approach

Methodology

1. ***Policy Review.*** In order to understand how the policy landscape in the Philippines had changed since the Roadmap was first developed in 2016, including any barriers to energy efficiency uptake, the LCEP team conducted a light touch policy review. It covered the energy efficiency and policy landscape in the Philippines since the 2016 development of the Roadmap by EU-Switch. Close attention was paid to the EEC Act and its accompanying IRR, the Philippine Development Plan, Department Circulars, reports, and guidelines provided by the DOE as well as other publicly available energy consuming market assessments and development-partner low carbon energy reports. A key aim of the review of the EEC Act was to ascertain how key provisions of the new EEC Act should be incorporated into strategic actions in the Roadmap.

2. ***Stakeholder Engagement.*** Engaging with energy efficiency experts in the Philippines, including experts within DOE, energy efficiency finance experts, development organizations, and international energy efficiency experts specializing in each of the different sectors included in the Roadmap. These engagements were untaken to further understand progress made against the Roadmap and other key priorities of the DOE and the wider government, so that they might be incorporated into the updated Roadmap. Such engagements contributed to an understanding of how the Roadmap could be used by DOE and other key stakeholders to advance energy efficiency in the Philippines.

3. ***International Best Practice Review.*** A light-touch international best practice review was undertaken to understand where international examples of energy efficiency policy could support the implementation of the Roadmap's strategic actions and the implementation of the EEC Act. It focused particularly on examples relevant to the implementation of key provisions of the EEC Act and other priorities of the DOE.

4. ***DOE Consultation Workshops.*** Between September and November 2020, the LCEP team held a series of workshops with DOE to discuss the priority actions and progress on implementing the EEC Act. The workshops included representatives from the Energy Utilization Management Bureau (EUMB) of the DOE and used Mural, an interactive web app, to facilitate contributions before, during, and after the workshops. It allowed DOE contributors to describe the key steps they considered essential to implementing the strategic actions in the Roadmap. The output of the workshops and MURAL contributions is synthesized below. In addition to forming part of the Roadmap, they will also inform the drafting of the National Energy Efficiency and Conservation Plan (NEECP).

Limitations

Limited data and the absence of consistent monitoring and data collection hampered efforts to perform a comprehensive review of the policy and programmatic landscape for energy efficiency in the Philippines. As a result, the assessment of the progress toward the goals of the current Roadmap has been largely qualitative and no further quantitative targets have been developed.

Structure of the Report

The report presents a visual Roadmap (2023-2050), including an introduction to and explanations of its components. This is followed by a series of tables for each sector and its short, medium, and long-term strategic actions. These tables set out each strategic action in the Roadmap (2023-2050), providing descriptions as well as indicative steps that might be undertaken to implement these strategic actions.

Energy Efficiency & Conservation (EEC) Roadmap 2023-2050

Introduction to the Roadmap

The Roadmap is intended to reflect key provisions of the EEC Act, current EEC programs, and other initiatives that will support the acceleration of energy efficiency in the Philippines.

As both an internal and a public-facing document, the final Roadmap and accompanying report are intended to support decisions around energy efficiency, from the development and financing of energy efficiency projects in the public and private spheres, to the development of partnership programs and wider behavioral changes at the household level.

Government Bodies and Projects

Government EE projects remain a priority for the DOE, with the Government Energy Management Program (GEMP) continuing to run through the short-, medium- and long-term. To effectively build up a pipeline of Government Energy Efficiency Projects (GEEP), at both the national and Local Government Unit (LGU) level, the DOE aims to build the capacity of, and promote better coordination between, government entities. Specifically, capacity building of the Interagency Energy Efficiency and Conservation Committee (IAEECC) who evaluate and approve the development of the GEMP will take place in the short-term. LGUs will similarly receive support for the identification and evaluation of energy efficiency projects, coordinated by the National Energy Efficiency and Conservation Office (NEEC Office), to be established shortly.

Demonstrating the Viability of Projects

It is important for the DOE that EE projects in the public sector pave the way for private sector investment in similar projects. There are opportunities for government-led projects to demonstrate the viability of EE projects and financing models and roll out EE initiatives to the public sector first, before doing so in other sectors. This is certainly the case for buildings. As an example, the DOE intends to develop a Building Energy Efficiency Index (BEEI) for public buildings. The lessons learned from this initiative will be incorporated into a BEEI for commercial buildings. It is hoped that public sector building projects using the BEEI will be able to demonstrate how different financing models for such projects might work for private investors, limiting the perceived risks of such projects.

Applying Lessons Across Different Sectors

Similarly, where the Guidelines on the Energy Conserving Design for Buildings (relating to commercial and public buildings) are used to update the Building Energy Efficiency Code (BEEC), a similar approach will be taken in the development of guidelines and the subsequent update of the BEEC for the residential sector. The lessons learned from the earlier strategic actions can be applied to the new sector.

Common Programs

The Philippine Energy Labeling Program (PELP) is another major program that has been undergoing a phase-by-phase implementation since 2020. The program mainly covers the labeling of appliances and other energy consuming products, including the prescription of minimum energy performance requirements. While MEPP development for appliances and energy consuming products such as lighting have been set out under the Residential sector on the Roadmap, it is also very relevant to buildings. MEPP developments for motors and other industrial devices is mostly applicable to the industrial sector. It is important that strategic actions are brought together under the umbrella of large programs where possible to enable synergies, to support coordinated actions and facilitate learnings across different sectors.

Cross-sector Initiatives

There are several key themes that are fundamental to the success of energy efficiency and conservation programs and strategic actions in all sectors. Finance programs support the more effective use of public funding and support a private sector supply of finance for EE investments in all sectors. Educating and informing public sector bodies, financial institutions, industry groups, and the public at large enhances the understanding of the importance of EE and the actions that consumers can take to improve it. Gathering data and evaluating progress of energy efficiency programs and actions in the Roadmap will be essential to gauge whether these are successful, and if not, where lessons can be learned and improvements made. Gender and Development (GAD) is mandated to be a fundamental consideration of any government energy efficiency and conservation projects, and this should follow in the private sector. Incorporating GAD into programs across all sectors could have significant positive effects, not only on gender equality but in poverty alleviation and the strength of the MSMEs sub-sector. Finally, with energy efficient products rapidly replacing inefficient models, the DOE has made it a priority to address the management of such waste.

An explanation of the Roadmap's components is provided in the next section.

The EEC Roadmap 2023-2050

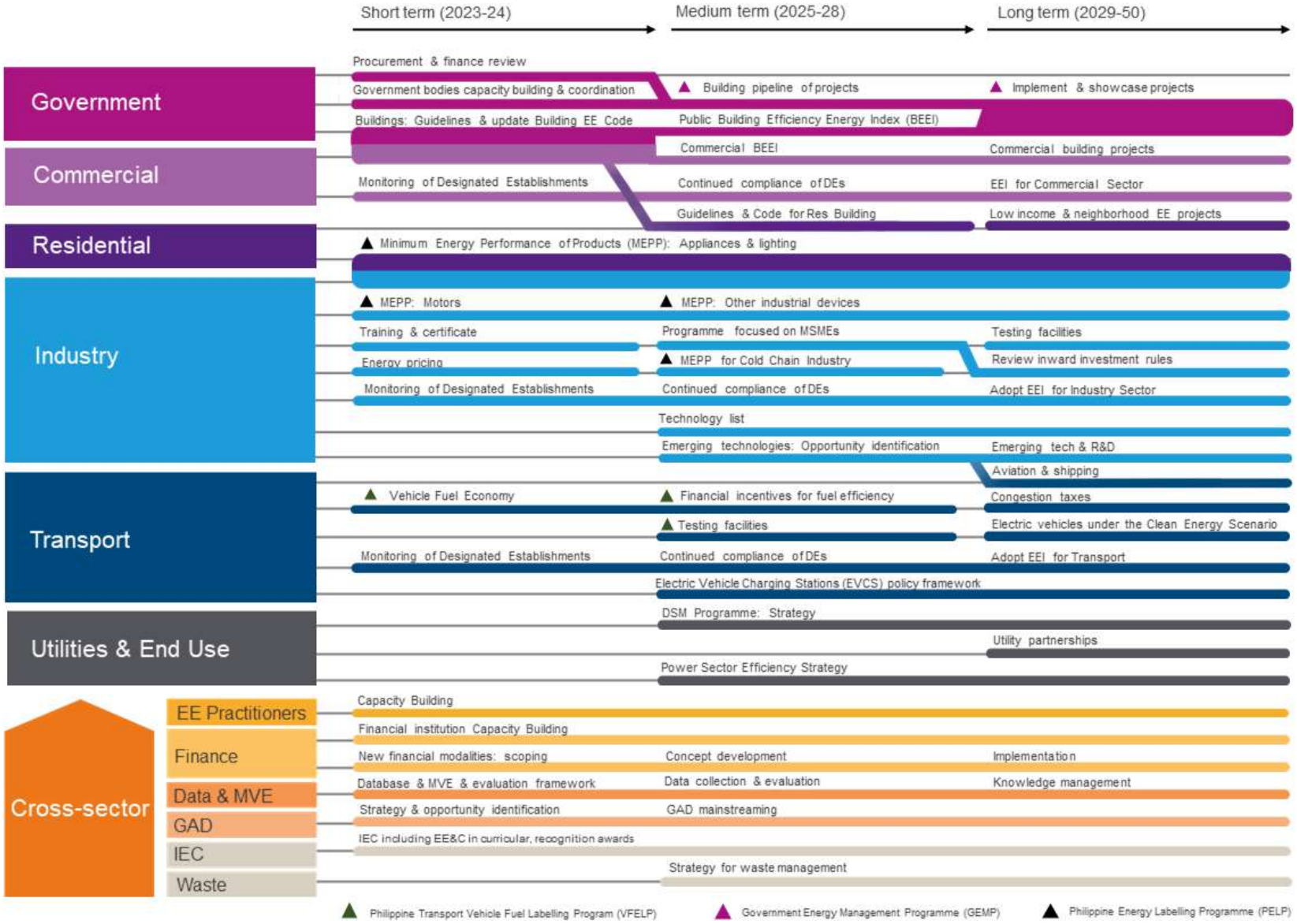
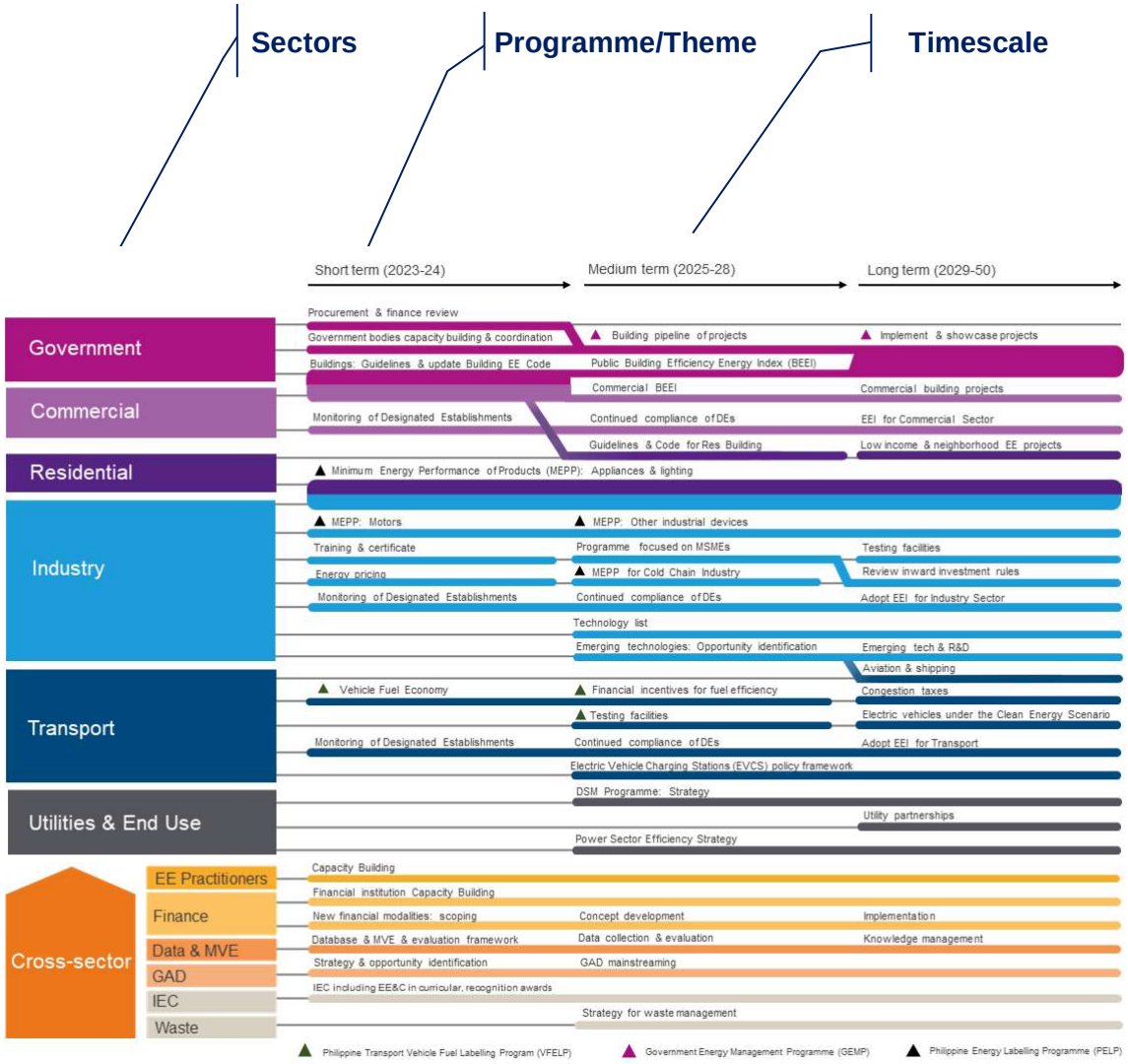


Figure 11. The Energy Efficiency and Conservation Roadmap 2023-2050

Breakdown of Different Elements of the Roadmap

This figure shows some of the key elements of the Roadmap. This are described in more detail below.



Strategic Actions

Sequential strategic actions that run over two or more timescales.

Linked strategic actions (these sit under the same theme – MEPP) that sit across two sectors.

Strategic actions that do not directly link to other strategic actions in the sector.

Cross-sector strategic actions: most of these actions will impact those of other sectors.

Strategic actions in the Cross-Sector are grouped by Program/Themes (e.g. Finance, Data & MVE, and so on)

Descriptions of the Different Elements Making Up the Roadmap

Sectors

Figure 12. Sectors in the Roadmap

The EEC Roadmap (2023-2050) sets out the sector-specific strategic actions for the DOE over short, medium and long-term timescales. These strategic actions are organized first into their relevant sectors (government, commercial, residential etc.), reflecting the primary stakeholders involved in the actions – these may be beneficiaries or groups of stakeholders in the economy with whom the DOE will work closely with.

Sitting below (or across) these sectors is the Cross-Sector, where strategic actions will impact or be highly relevant to nearly all the other sectors, which shows the primary themes or programs within this Cross-Sector Group. These are:

- Energy Efficiency Practitioners
- Finance
- Data & Monitoring, Verification, and Enforcement (MVE)
- Gender and Development (GAD)
- Information and Education Campaigns (IEC) and
- Waste Management (Waste)

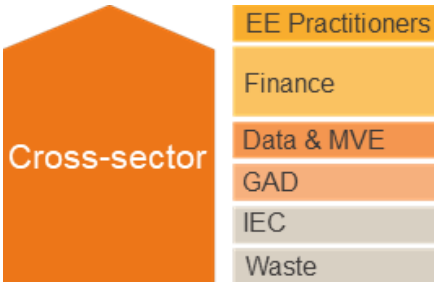


Figure 13. Cross-Sector

Strategic Actions

Strategic actions are represented in the Roadmap in white text mapped onto colored, horizontal bars. These are shortened versions of the full strategic actions, with the full strategic actions are set out in the tables below in the 'EEC Roadmap (2023-2050) by Sector' section.

An excerpt from the Roadmap showing strategic actions is shown in Figure 14. The colors of the horizontal bars correspond to the Sectors (see the 'EEC Roadmap (2023-2050) by Sector' section), and the presentation of strategic actions on continuous workstreams in this way aims to demonstrate their continuation over time and how they may influence or be influenced by other strategic actions.

Descriptions and examples of proposed activities under them are set out in tables in the below 'EEC Roadmap (2023-2050) by Sector' section.

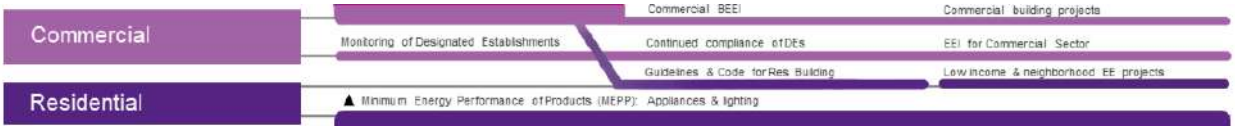


Figure 14. Excerpt from the Roadmap showing Strategic Actions in horizontal, coloured workstreams

Program or Theme

Strategic actions are also, where appropriate, grouped by programs or themes, which may sit across two or more sectors.

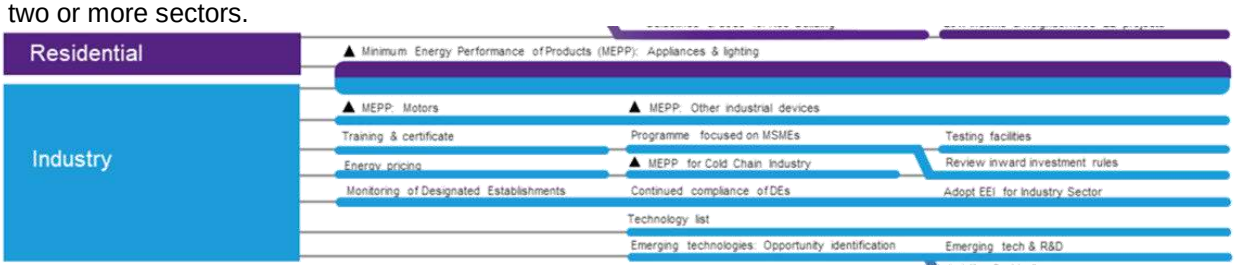


Figure 15. Excerpt from the Roadmap showing the Philippine Energy Labeling Program (PELP)

Figure 15 is an excerpt from the Roadmap, which outlines plans relevant to the PELP. This program involves the development of standards and labels for energy-consuming products, as well as vehicles, and therefore links the strategic actions of developing MEPP for various appliances (relating predominantly to Residential Sector), with MEPP development for motors (Industry Sector), and minimum energy performance for transport vehicles (Transport Sector). Another program which links several actions is the GEMP.

The Roadmap aims to show that strategic actions will impact more than one sector, and that learnings from an approach in one sector may be applicable to another.

As an example, there are several key strategic actions in the Roadmap that relate to buildings. The strategic action to update the Philippine Building Code (and the referral Building Energy Efficiency Code within this) is relevant to both commercial and government buildings in the short-term. It is also relevant to the Residential sector in the long-term, as the Roadmap includes a further strategic action to update the Building Code for energy efficiency measures in residential buildings.

Please note that the descriptions and activities of the strategic actions in the sections below are not repeated in each sector for which they are relevant.

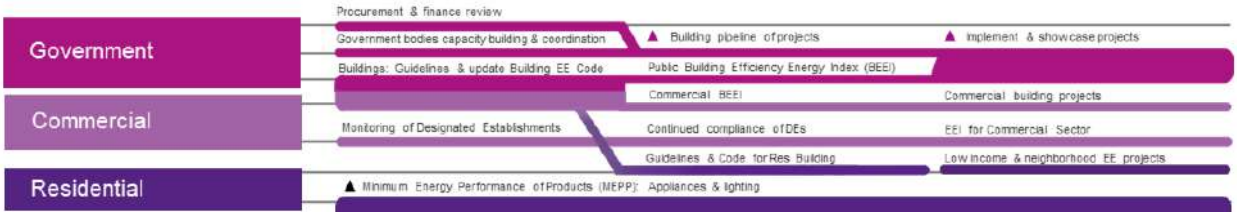


Figure 16. Products or Assets (such as buildings) relate to two or more sectors.

In the tables in the 'EEC Roadmap (2023-2050) by Sector' section, the programs, and themes under which the strategic action sits is highlighted in **bold.**

Short-, Medium-, and Long-Term Timescales

It is important to note when reading the Roadmap that the strategic actions and overarching programs or themes have not necessarily commenced and may not be completed within one timeframe (short/medium/long-term).

The Roadmap intends to show that strategic actions may be initiated within earlier timeframes and continued through implementation and conclusion, which may be in subsequent timeframes. These actions may also integrate with, contribute to, or borrow lessons from other strategic actions or programs over time.

Shown below in Figure 17 is the IEC strategic actions over time. As the development and rollout of IECs is an action that the DOE has and will continue to undertake, it is represented here as spanning across

all three timescales. Where the activity has commenced or will commence in the short-term, it has been grouped with the short-term actions in the Cross-Sector table below.

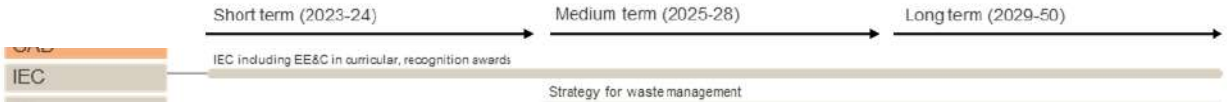


Figure 17. IEC over Short, Medium- and Long-term

Associated or Linked Roadmaps

It should be noted that some strategic actions related to alternative fuels and electric vehicles and charging stations have not been included in the Transport sector of this Roadmap. These have been omitted from the EEC Roadmap (2023-2050) as they are to be included in separate, though linked, roadmaps which are under Republic Act No. 11697.

EEC Roadmap (2023-2050) by Sector

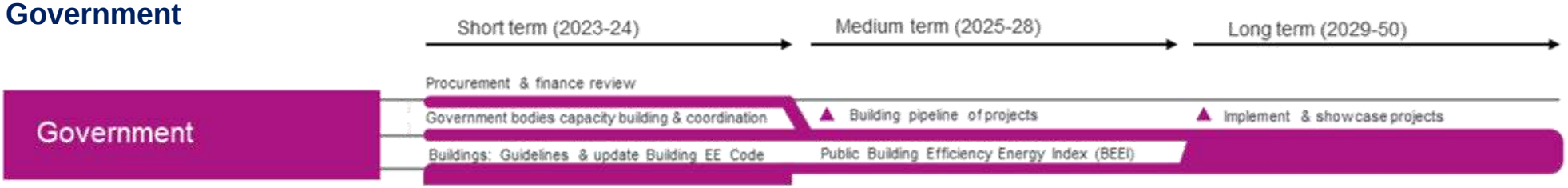
Descriptions and Associated Activities of the Strategic Actions

The following section presents and describes the full strategic actions from the Roadmap. These are set out in tables below, with the descriptions and indicative activities for implementation of the Roadmap's strategic actions. These tables group the strategic actions by:

1. Sector (where these sit across multiple sectors and the most relevant sector)
2. Short, medium-, and long-term
3. Program or theme

In addition, a brief description of the strategic action or plan, these include rationales for their inclusion, highlights where the strategic action is linked to the EEC Act or the existing Roadmap.

Government



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
Government Energy Management Program (GEMP): Procurement & finance review	Review procurement and finance modalities	• Government procurement of energy services can be challenging, and the DOE recognizes the need to address procurement to catalyze the uptake of energy efficiency projects in the public sector. Enhancing the procurement and finance modalities of the public sector will, in turn, open opportunities for the ESCO sector to provide their services for the government. Difficulties with the procurement process for energy efficiency projects slows their uptake. • DOE requires support to develop the appropriate procurement processes and financing modalities for energy efficiency projects. LCEP is addressing this by providing technical assistance for the EEC Act IRR Section 47 on Financial Arrangements.	• Develop, in coordination with IAEECC, Department Circulars (DC) for financing modalities and criteria for evaluation and approval of government EE projects. • Development of standard templates and contracts in collaboration with contract specialists.
GEMP: Government bodies capacity building & coordination	Inter-Agency Energy Efficiency and Conservation Committee (IAEECC)	• It is a requirement of the EEC Act that IAEECC representatives evaluate and approve GEMP projects and programs. A plan for capacity building would enhance the skills and capacity of representatives to evaluate projects and improve their decision-making.	• Identify individuals/organizations to support the development of Guidelines for the evaluation of projects under GEMP. • Internal review and approval of formal Guidelines.

	Guidelines development and capacity building	• Similarly, the development of a set of Guidelines for the evaluation of energy efficiency projects under GEMP for IAEECC representatives will support effective and fair evaluations.	• Identify individuals/organizations for engagement for the development and delivery of the training in project evaluation. • Develop training modules and prepare materials for DOE approval. • Delivery of training to IAEECC, alternative and technical representatives related to GEMP implementation, including evaluations of trainees. • Certification of trainees.
	Set up National Energy Efficiency and Conservation Office (NEEC Office)	• The NEEC Office is to be set up as per Section 30 of the EEC-IRR. Section 4 of Department Order (DO) DO 2020-01-0002 presents the mandates of the NEEC Office, which includes providing support to the designated National Energy Efficiency and Conservation Coordinating Officer (NEECO) and coordinating with LGUs.	• Coordinate with the Department of the Interior and Local Government (DILG) and League of LGUs to recommend the NEECO. • Develop and agree on NEEC Office's Terms of Reference. • Ensure the provision of support to the NEECO and enable coordination and other activities required from the NEEC Office, as per its mandates.
	Establish a framework to enhance coordination and develop LGU capacity through NEEC Office	• As per DO 2020-01-0002, the NEEC Office is mandated to coordinate with LGUs to ensure the consistency of all Local Energy Efficiency and Conservation Plans (LEECP) with the National Energy Efficiency and Conservation Plan (NEECP), and in matters relating to the GEMP. • The NEEC Office would similarly support capacity building of LGUs in energy efficiency. Better coordination between LGUs could enable the aggregation of local energy efficiency into larger-scale programs, improving opportunities for financing.	• Collaborate with the DILG and ULAP to develop a framework in coordination with the NEEC Office and NEECO. • Work with the NEEC Office to support the development and establishment of LEECPs for LGUs. • Support the NEECO with the provision of tools and guidance for LGU capacity building and in conducting IECs and other training.
	Develop tools and guidance for LGU EEC activities	• A key barrier faced by LGUs is a lack of institutional capacity. With new regulatory changes in the Philippines, LGUs need to create both a climate action and development plan and a LEECP.	• Conduct a needs assessment by engaging with LGU representatives. • Conduct a study into LGUs' current and planned programs or projects to understand which of these relate to EEC.

		• There is an opportunity here to enhance LGU capacity and align LEECPs with existing reporting requirements. Having simple and standardized tools and guidance for LGUs to follow will help smoothen the process of creating and adopting LEECPs and reduce the administrative burden. • The tools and guidance would be developed in coordination with the NEEC Office (see above) and leverage existing tools such as the LEECP Template and Monthly Electricity and Fuel Consumption Report Forms. Tools and guidance materials would be disseminated through Information and Education Campaign (IEC) activities, including local workshops.	• Deliver workshops and training through IEC on the preparation of LEECP with LGUs. • Develop and rollout a Building Code training program for selected LGUs in coordination with the NEEC Office. • Verify data collected through energy audit spot-checks. • Use data to further develop and refine tools and guidance in the development of LEECPs.
Buildings: Guidelines & update Building Energy Efficiency Code (BEEC)	Development of *Guidelines on the Energy Conserving Design for Buildings* and update of the BEEC	• It has been the DOE's intention that the energy efficiency measures included in the soon-to-be-finalized *Guidelines for Energy Conserving Design for Buildings* will form part of the Building Energy Efficiency Code, which forms part of the Philippine Building Code. This would mean that while the guidelines are voluntary, their inclusion in the Building Code would make them mandatory. • Following the update of the BEEC, a Building Energy Efficiency Index (BEEI) would be developed (Medium Term).	• Create a review body to oversee the inclusion of EE measures in the *Guidelines on Energy Conserving Design for Buildings* in the Green Building Code. • Develop policy circular on BEEC covering existing buildings for renovations and retrofits. • Develop database containing registry list of existing buildings for renovations and retrofits and details of EE projects implemented. • Develop implementation strategy in partnership with appropriate stakeholders including DPWH, DILG and LGU-OBO.

Medium-Term (2025-2028)

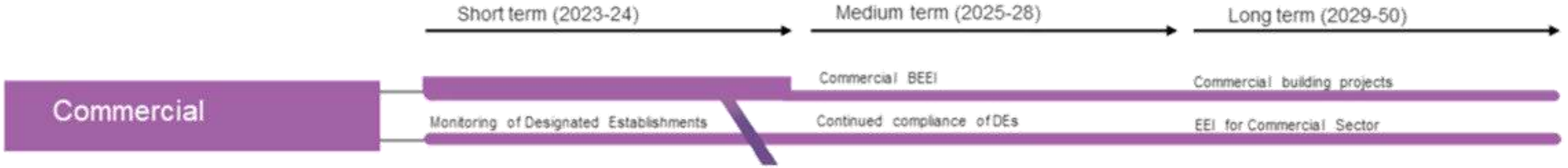
Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
GEMP: Build pipeline of projects	Build a pipeline of GEMP projects focused on: Public buildings and LGU projects	Buildings: • Demonstration projects are needed to kickstart the market and act as models for others to follow. Government-led action on energy efficiency is an important means of building confidence in the market and continues to be a high priority for the DOE when it comes to energy efficiency in buildings. LGUS: • The coordination body should actively work with LGUs and other departments to support the pipeline development of energy efficiency projects at the LGU level. We recommend the body actively seek out potential projects and develop concepts, including through the aggregation of smaller projects. The body should work with LGUs and financial institutions to help source financing for these projects, with lessons to be shared across units. • A potential pilot is the implementation of efficient road lighting. This can act as a pilot project for LGUs and has been identified by the DOE as a priority area to demonstrate the potential of energy savings to LGUs.	Buildings: • Develop a strategy for building a pipeline. • Based on the results of the spot-checks conducted on government buildings for the BEEI, begin to identify possible and appropriate energy efficiency projects. • Evaluate the potential of the projects and create a short-list detailing the feasibility of delivery for the relevant government agencies. • Propose short-listed projects on energy efficiency and conservation to the IAEECC to establish Government Energy Efficiency Projects (GEEPs). LGUs: • Further capacitate LGUs on the development of a LEECP. • Conduct IEC to present EEC project concepts for LGUs. • Conduct energy audits and spot-checks of LGUs to determine possible/appropriate projects on EE. • Propose applicable projects on energy efficiency and conservation to IAEECC to establish GEEPs in relation to LEECPs.

GEMP: Public Building Energy Efficiency Index (BEEI)	Develop a BEEI for public sector buildings	• A BEEI is a performance index which acts as a reference standard for energy efficiency in buildings. It enables energy use in buildings to be compared against a benchmark. Commonly it is expressed in kWh/m2/year. • A BEEI would facilitate accurate forecasting of energy consumption in public buildings, and therefore support projects and initiatives to reduce energy demand. • The initiative complements requirements for mandatory disclosure of energy consumption, and would specify thresholds for building energy performance in line with the BEEC (see Commercial Sector) • This initiative would first be rolled out in the government sector and later, in the commercial sector.	• Conduct a Building Energy Consumption Survey for government buildings. • Conduct energy audits and spot-checks of government entities to establish an energy efficiency index for government buildings. • Evaluate and verify data submitted to the EEC Database System by government entities and LGUs. • Establish BEEI for government entities and LGUs. • Develop BEEI Manual Guidelines containing BEEI for specific types of buildings. • Conduct on-site monitoring, verification, and assessment of DEs' compliance to BEEI. • Develop database of buildings that are both compliant and non-compliant with the DOE-issued MEPP-BEEI for all types of buildings.

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
GEMP: Implement & showcase projects	Establishment of an EEC institute to showcase technologies and best practices in the government sector	An EEC institute would facilitate the demonstration of energy efficiency technologies and showcase successful projects. This is an important action for gaining buy-in and building the confidence of the private sector, as well as other public sector bodies. The establishment of an institute would highlight examples of best practices for other project developers and public authorities to follow. There are currently a few projects where donor organizations are working with government agencies to showcase technologies, and this experience should be leveraged and applied at a larger scale. ICLEI is working on a Clean Energy Living Laboratories to showcase and demonstrate energy efficient technologies. Having a permanent establishment, driven and owned by the DOE, would make it a central point for demonstrating, showcasing, and mainstreaming energy efficiency technology in the Philippines.

Commercial



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
Buildings: Guidelines & update Building EE Code	Development of *Guidelines on the Energy Conserving Design for Buildings* and update of the Building Energy Efficiency Code (BEEC)	• Similar to the government sector, the Building Energy Efficiency Code will also be developed with commercial buildings in mind.	• Create a review body to oversee the inclusion of EE measures in the *Guidelines on Energy Conserving Design for Buildings* in the Green Building Code. • Develop policy circular on BEEC covering existing buildings for renovations and retrofits. • Develop database containing registry list of existing buildings for renovations and retrofits and details of EE projects implemented.
Designated Establishments	Monitoring of Commercial DE Compliance	• Commercial entities classified as DEs are required to comply with their yearly reportorial obligations, designation of a Certified Energy Manager of Certified Energy Conservation Officer for the establishment, and energy audit requirement once every three (3) years.	• Review DE entries to the Online Submission Portal • Conduct site visits to validate reports of commercial DEs

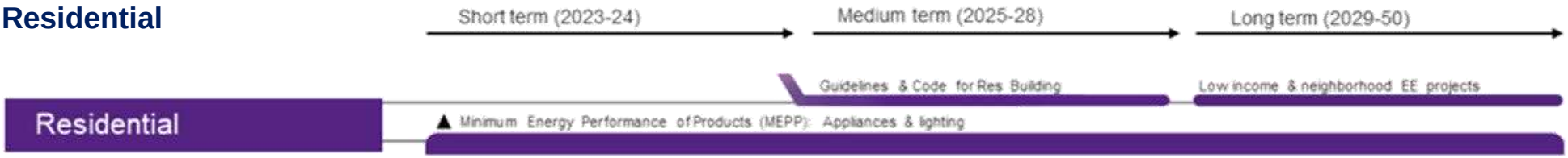
Medium-Term (2025-2028)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
Buildings, Building Energy Efficiency Index (BEEI)	BEEI development for buildings	• The BEEI developed for public buildings (see Government Sector) would be adapted for the commercial sector. • Policy development for the Building Energy Labeling System.	• Conduct market study for selected types of buildings and establish baseline data information. • Develop BEEI for selected types of buildings. • Develop strategy for the implementation of the BEEI across commercial building sector.
Designated Establishments	Continued Compliance of DEs	• DEs are expected to continue compliance with existing obligations as well as to assist in the establishment of an Energy Efficiency Index	• Review DE entries to the Online Submission Portal • Conduct site visits to validate compliance of commercial DEs

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
Buildings: Building Energy Efficiency Labeling Scheme	Establishment of a building energy efficiency labelling scheme	Consistent with the goal of ensuring energy efficiency and compliance to the Minimum Energy Performance for Sectors, the DOE will push for the multi-sectoral implementation of Building Energy Labeling System which will be able to identify buildings that are compliant with the guidelines on the energy conserving design of buildings. The DOE aims for the continuous institutionalization of the BEEI across all commercial entities and ensure compliance with the MEP for the sector.
Designated Establishments	Continued institutionalization of the EEI across the sector	To ensure the establishment of a baseline standard for energy efficiency in the commercial sector, the DOE will endeavour to continuously institutionalize the EEI for the commercial sector.

Residential



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
Philippine Energy Labeling Program (PELP), MEPP for appliances & lighting	Establishment of MEPP requirements and labeling guidelines for appliances and lighting	• The development of MEPP is a priority for the DOE under the EEC Act IRR Section 56 MEP for Energy Consuming Products. • In accordance with the EEC Act, MEPP have been developed by the DOE for room air conditioning (RAC), refrigeration, and lighting. Updating of the Particular Product Requirements (PPR) and MEPP requirements for these products are considered a high priority.	• Enhancement of the PELP online registration system. • Strengthen the MVE framework. • Increase awareness through IEC activities. • Increase post-market surveillance and monitoring. • Establish recognition system/program for stakeholders.
	Labeling and establishment of MEPP for electric fans, energy saving devices, TVs, and washing machines	• Washing machines and electric fans have been identified as other priority domestic appliances that the DOE will develop MEPP for	• Development of implementing guidelines for electric fans and washing machines • Development of online registration for electric fans and washing machines • Establishment of operational MEPP • Increase post-market surveillance and monitoring

Medium-Term (2025-2028)

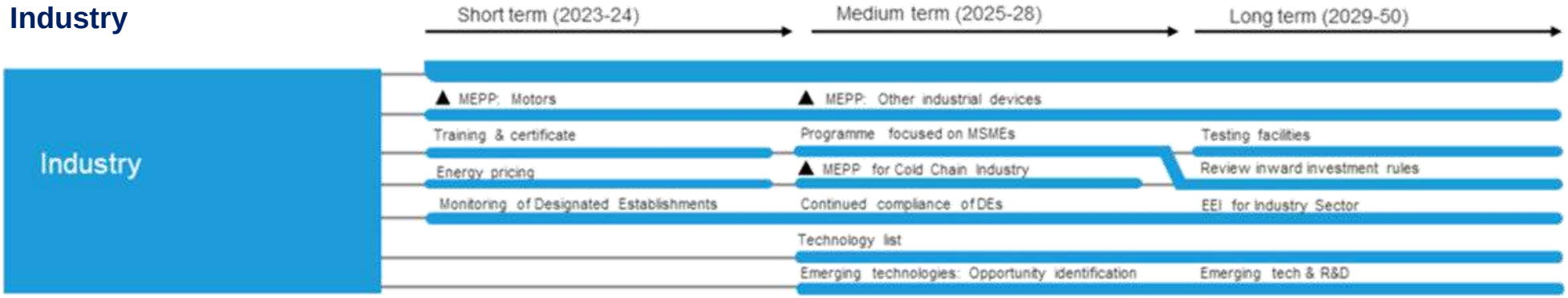
Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
PELP and MEPP for appliances & lighting	Labeling and MEPP for other household appliances	• Prescribed labeling of common household appliances such as rice cookers, electric iron, microwave oven, induction cookers, among others. The corresponding MEPP for the said appliances will also be developed.	• Conduct market studies. • Establish MEPP standards through collaboration with experts and key stakeholders. • Harmonize standards with other ASEAN countries. • Increase post-market surveillance programs
Buildings, Guidelines & code for residential buildings	Guidelines for Energy Conserving Designs in Low-rise Residential Buildings and subsequent inclusion in Residential Building Code	• This is a target milestone for the Energy Efficiency and Conservation Program Management and Technology Promotion Division (EPMPD).	• Develop and implement policies on the Building Energy Code (BEC) for low-rise residential buildings (e.g. residential condominiums) in collaboration with the DPWH, DILG and Office of the Building Official (OBO). • Collaborate with professional society associations (electrical and mechanical engineers and architects) and building construction associations for the adoption of building designs in the Guidelines and subsequently, the Building Energy Code for Low-rise Buildings.

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
Low-income households & energy-efficient	Scope and develop energy efficiency projects and	• The plan to develop energy efficiency programs for low-income households was included in the 2017-2040 Roadmap. Although not addressed specifically in the EEC Act, it remains a high priority for the DOE that these programs are developed and implemented. The programs can be tied to the Gender and Development (GAD) objectives of the DOE.

neighbourhood projects	programs targeting low-income households	• Energy efficiency is particularly important for low-income households as they provide dual benefits of decreasing energy costs, thereby increasing income to be spent on other necessities, and reducing energy poverty.
	Develop and implement an energy- efficient housing neighbourhood project program.	• The program 'Towards Energy-Efficient Housing Precincts' was previously included in the initial Roadmap (2017-2040) as recommended by the EU-Switch program. The term 'precinct' has been replaced here with 'neighbourhood' to make the program's objective clearer. Some of the initiatives that could be prioritized and demonstrated through energy- efficient neighbourhoods include: prioritizing active transport (cycling, walking) and LEV transport, energy-efficient building designs, energy-efficient lighting and on-site energy generation. • The DOE has indicated that this program is a longer-term priority. • There is potential for this to form part of a wider energy-efficient low-income households' program or a project to be developed with LGUs.

Industry



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
PELP and MEPP: Motors	MEPP developed for motors	• The development and rollout of energy standards beyond the appliances sector remains a high priority for the DOE, and MEPP for motors were included in the previous 2017-2040 Roadmap. Use of electric motors in the industry are widespread, and since it is an energy-intensive product, there are significant opportunities for efficiency. • The development of MEPP for motors is currently being implemented by the DOE in cooperation with LCEP. • Sound MVE and evaluation systems are required to ensure that any measures put in place are followed as designed and their effectiveness properly assessed. The DOE Monitoring Team should be trained to conduct monitoring and evaluation. Reporting templates	• Conduct market study. • Collaboration with experts for the development of MEPP standards and PPRs. • Capacity building and delivery of technical training on high-efficiency motors. • Harmonization of MEPP with ASEAN standards. • Conduct stakeholder consultation on the developed MEPP and PPR for motors. • Establish the approval process of the developed MEPP and PPR for motors.

		and procedures, allocation of responsible officers for reporting and awareness-raising, and a framework for reporting results would also be key inclusions here.	
Designated Establishments	Monitoring of Industrial DE Compliance	• Industrial entities classified as DEs are required to comply with their yearly reportorial obligations, designation of a Certified Energy Manager of Certified Energy Conservation Officer for the establishment, and energy audit requirement once every three (3) years.	• Review DE entries to the Online Submission Portal • Conduct site visits to validate reports of industrial DEs
Training & certification	Certification and qualifications for CEMs and CECOs	• Under the EEC Act, Certified Energy Managers (CEMs) and Certified Energy Conservation Officers (CECOs) must obtain certain qualifications to attain certification. • Training materials and curricula for these are currently under development. While existing qualifications may suffice in the meantime, the rollout of these trainings and certifications is a high priority for the DOE. • These qualifications will be built upon existing training modules and will be aligned with ASEAN certification standards. The focus here is to increase the capacity of energy management individuals and energy service delivery firms, which will be essential to scaling up energy efficiency activities.	• Develop training regulations and training modules for CECOs and CEMs. • Develop accreditation system for training institutions for CECOs, and CEMs. • Develop database for CECOs and CEMs.
Energy pricing	Review of energy pricing	• The NEECP sets out a vision to ensure optimal energy pricing, among other goals. As an inclusion of the 2017-2040 Roadmap and a continuing priority for the DOE, this long-term strategic action would mean examining pricing structures for electricity tariffs. • The Philippines has one of the highest electricity tariffs in Asia, and the government does not	• Review of potential means to reduce electricity tariffs

		subsidise electricity. A review of energy pricing has the potential to address a key development objective, reducing costs faced by the poorest Filipinos.	

Medium-Term (2025-2028)

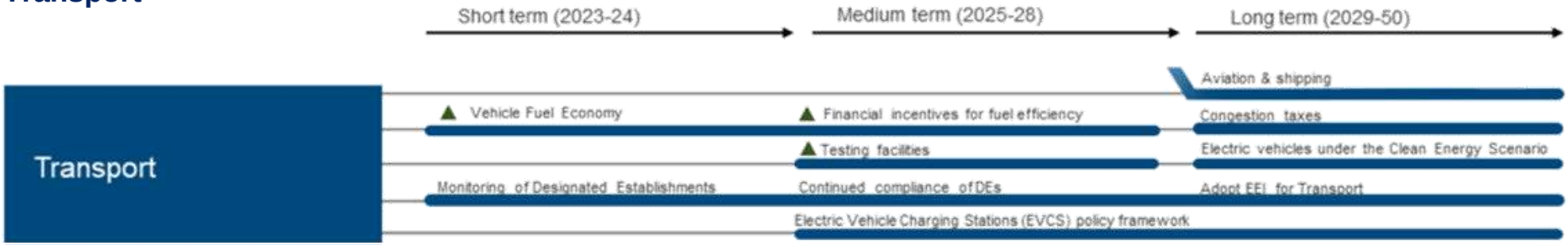
Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
PELP and MEPP: Other industrial devices	Minimum Energy Performances for Products (MEPP) for other industrial devices	• In line with the EEC Act, the DOE is prioritizing the development of MEPP for other industrial devices beyond motors. Such devices might include transformers.	• Conduct market study and profiling. • Capacity building and delivery of technical training on industrial services. • Collaboration with various experts and key stakeholders for the development of standards and PPRs. • Harmonization with ASEAN standards.
MSMEs, Program focused on MSMEs	Scope and develop sectoral programs for energy-intensive industries (with focus on MSMEs)	• Programs focused on energy-intensive sectors could result in significant energy-saving opportunities. Sectoral-focused programs were an inclusion on the 2017-2040 Roadmap, and it was recommended that cement and sugar (high-energy consumption sectors) be target industries. However, studies since then have suggested that such industries may not be as significant as initially perceived, and further work needs to be completed to identify the target sectors. • A further focus of such programs should be MSMEs to support the uptake of energy efficiency in this sub-sector. This would link to the DOE's ambition for more inclusive energy efficiency efforts within sectors such as industry and would align with development objectives.	• Conduct market survey to establish MSMEs baseline information. • Develop database for MSMEs containing registry list, annual energy consumption, and projects implemented etc. • Develop programs that promote energy efficiency including energy management, energy audit, energy efficiency and conservation measures, and financing energy efficiency projects.

		• Possible avenues for exploration include: developing and piloting energy efficiency projects in areas of cold-chain, programs targeting the uptake of a specific technology through favourable financing, and so on.	
Emerging technologies, Opportunity identification	Scoping study and roadmap for EE opportunities	• Energy efficiency technologies are rapidly advancing and there may be opportunities on the horizon to advance energy efficiency in the industry and other sectors. Studies should be done to identify advanced next generation and emerging energy technologies applicable to various sectors of industry.	• Conduct study to identify EE opportunities in the industry sector. • Develop a roadmap on the potential energy technologies and alternative energy sources/fuels for the sector.
Technology list	Development of a technology list for energy efficiency products and services	• An Energy Technology List (ETL) is a list of high-performing efficient products (and potential services), which can be used as a reference for consumers to understand the energy efficiency of household products. An ETL can be used by project developers and financiers to understand the efficiency of technologies being used and reduce perceived risks of financing a new unfamiliar technology. Examples of ETLs include the Energy Technology Product List in the United Kingdom. • The DOE is looking to develop the EE finance market in the Philippines. An ETL can be government-approved and tied to the eligibility criteria for a financing program. In this way, an ETL can also help spur access to energy efficiency finance. This could be linked to appliances, building materials, and even services.	• Engage experts and perform scoping study for the development of a technology list. • Develop concepts which should be linked to Finance programs. • Understand the potential technologies and services to be covered. • Understand which stakeholders would be using the ETL. • Test the ETL with relevant stakeholders. • Develop a roadmap for development, including parties who would host and maintain the ETL.
Designated Establishments	Continued Compliance of DEs	• DEs are expected to continue compliance with existing obligations as well as to assist in the establishment of an Energy Efficiency Index	• Review DE entries to the Online Submission Portal • Conduct site visits to validate compliance of industrial DEs

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
Testing Facilities	Testing facilities for motors	• The development of testing facilities would support MVE for MEPP, ensuring the consistency and standardisation of testing. This is particularly important as the scope of the PELP expands. The DOE is keen to understand whether such facilities can be financed by the private sector. Any DOE-engaged laboratory should also be equipped to test the product types.
Review inward investment rules	Review inward investment rules for EE to remove distortions	• This is an existing strategic action in the 2017-2040 Roadmap aimed at ensuring new players can enter the market and new investments in industrial equipment and projects in the Philippines adhere to energy efficiency best practices. It remains an ambition of the DOE to examine how industrial energy efficiency can be encouraged through negotiated agreements, restrictions, and other incentives with inward investors.
Emerging Technologies, emerging tech and R&D	Identify emerging technologies, and develop R&D capacity	• R&D capacity development in the Philippines for EEC is an existing strategic action of the 2017-2040 Roadmap and remains an ambition of the DOE albeit a long-term one.
Designated Establishments	Continued institutionalization of the EEI across the sector	• To ensure the establishment of a baseline standard for energy efficiency in the industrial sector, the DOE will endeavour to continuously institutionalize the EEI for the industrial sector.

Transport



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
VFELP: Fuel Economy Performance Rating and Label	Minimum energy performance for transport vehicles	• Requirements for fuel economy performance and labeling are set out in Section 17 of the EEC Act. • As with labeling and ratings for energy efficient products, such initiatives relating to fuel efficiency also fall under the PELP. • Under this program, vehicles will have to pass requirements for emissions and apply for a certificate of compliance in meeting emissions. • This short-term strategic action includes the development of an MVE framework, which will also encompass a framework for evaluating its progress against objectives. • Additionally, fuel efficiency ratings and labeling rollout will require an enhanced coordination mechanism as the responsibility for energy labeling and MVE lies across the DOE, Department of Environment and Natural Resources (DENR), and Department of Transportation (DOT). Other	• Conduct market assessment and profiling. • Complete baseline assessment for efficiency of new light-duty vehicles. • Collaborate and coordinate with industry players and other government agencies to develop standards and PPRs and harmonize policies and programs to promote energy-efficient vehicles. • Conduct studies on best practices in the implementation of efficient, next-generation transport vehicle technologies. • Capacity building and delivery of technical training to enhance knowledge and expertise. • Implement policies to encourage government institutions (including the DOE) to re-fleet their vehicles to more energy-efficient and environmentally friendly non-petroleum-based vehicles.

		agencies such as the Bureau of Customs (BOC), Department of Public Works and Highways (DPWH), Department of Trade and Industry (DTI), and LGUs will also be involved.	• Carry out IEC campaigns for the transport sector including creating social media awareness and roadshows to showcase advantages of energy-efficient vehicles. • Promote fuel efficiency and conservation in public transport, government, and private vehicle fleets through driver training seminars. • Establish collaboration with transport companies both for public, government, and private entities for sustainable EEC programs across land, sea, and air transport sectors • Strengthen MVE framework.
Designated Establishments	Monitoring of Transport DE Compliance	• Transport entities classified as DEs are required to comply with their yearly reportorial obligations, designation of a Certified Energy Manager of Certified Energy Conservation Officer for the establishment, and energy audit requirement once every three (3) years.	• Review DE entries to the Online Submission Portal • Conduct site visits to validate reports of transport DEs

Medium-Term (2025-2028)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	Description	Activities
VFELP: Financial incentives for fuel efficiency	Financial incentives for fuel efficiency	• An inclusion of the 2017-2040 Roadmap, the DOE will prioritize the investigation of incentives that may be attached to fuel efficiency. • Financial incentives that may be investigated include differentiated vehicle taxes for efficient vehicles and concessional payments (penalties) to be given to vehicle owners that meet (did not meet)	• Conduct market study and cost-benefit analysis of existing fiscal policies. • Coordinate with the Board of Investments (BOI), Department of Finance (DOF), and the Finical Institution (FI) sector on possible fiscal incentives based on fuel efficiency and lower emissions including.

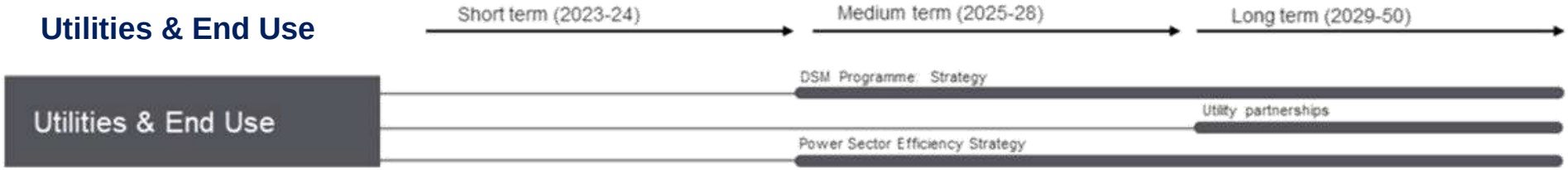
		standards, such as discounts for registering efficient vehicles.	• Encouraging use of fuel-efficient technologies by providing consumers with vehicle package including fuel, supply of auto parts, and after sales service. • Government subsidy to local manufacturers and infrastructure developers/development. • Registration discount for higher fuel efficiency vehicles. • Less tariffs for the purchase of imported spare parts for fuel-efficient vehicles. • Attractive loan packages with government FIs. • Gather data/information from ASEAN member countries, the EU, or the US on different fiscal and non-fiscal incentives and convene a TWG to develop appropriate incentive packages that will assist the Philippine market. • Support public transport development. • Harmonize policies with concerned NGAs.
Electric Vehicles Charging Stations policy framework	Promote adoption of EVs	• The emerging EV technology presents opportunities for improving energy efficiency in the transportation sector in support of the government's energy independence agenda. • There is a need to consolidate and harmonize all existing issuances to ensure the safe, efficient operations and system reliability and to accelerate investments in EVCs in the country. • Department Circular No. DC2021-07-0023 also known as "Providing for a Policy Framework on the Guidelines for the Development, Establishment, and Operation of Electric Vehicle Charging Stations (EVCS) in the Philippines"	• Develop and update the Comprehensive Roadmap for the Electric Vehicle Industry (CREVI). • Harmonize existing policies and issuing regulations on use of charging stations. • Implement plan, programs, and IEC campaigns to promote adoption of ECs.
	Charging infrastructure		• Conduct market assessment study. • Implement accreditation system of charging station service providers. • Establish a database of accredited charging station service providers.
Testing facilities	Testing facilities for vehicles	• Vehicle fuel efficiency and testing involves putting vehicles through a series of assessments according to MEPP standards and labeling. • Dedicated testing facilities that are aligned with ASEAN standards will support the government with MVE and general compliance.	• Issuance of policy for the recognition/registration and MVE of testing facilities for vehicles. • Implement system for the recognition/registration of testing facilities.

		• As with testing facilities in the *Industry Sector*, the DOE is eager for these facilities to be supported by private sector investment.	
Designated Establishments	Continued Compliance of DEs	• DEs are expected to continue compliance with existing obligations as well as to assist in the establishment of an Energy Efficiency Index	• Review DE entries to the Online Submission Portal • Conduct site visits to validate compliance of transport DEs

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
Emerging technologies, Aviation and shipping	Energy efficiency programs beyond road transport (passenger and cargo ships, aviation fuels)	• An inclusion from the 2017-2040 Roadmap which will remain in the updated Roadmap. The DOE recognises the need to increase energy efficiency in these historically difficult sectors. Policy and programmatic recommendations by organizations such as the IEA should be investigated.
Congestion taxes	Congestion taxes	• Congestion pricing would require users to pay more for the use of certain public goods, such as roads, that are subject to congestion through excess demand. Cities such as London, Stockholm, and Singapore apply such charges as an efficiency policy. The exploration of how this policy could apply in the Philippines remains a priority of the DOE, having been included in the 2017-2040 Roadmap.
Designated Establishments	Continued institutionalization of the EEI across the sector	• To ensure the establishment of a baseline standard for energy efficiency in the transport sector, the DOE will endeavour to continuously institutionalize the EEI for the transport sector.

Utilities & End Use



Medium-Term (2025-2028)

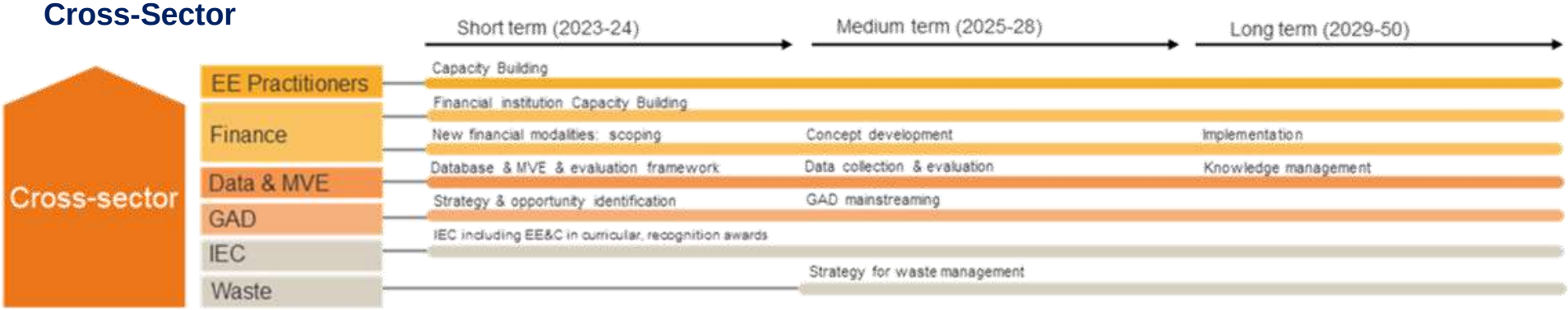
Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
Demand-side management (DSM) program, Strategy	DSM policy and strategy for program development	• The development of a DSM program is a requirement under Section 70 of the new EEC Act. A DSM program for the electric power industry would be pursued through load management and other measures implemented by distribution utilities to encourage end-users to manage their loads in an efficient manner. • A DSM policy would first need to be developed and a strategy adopted by scoping out best practices in DSM and conducting extensive stakeholder engagements. The strategy would also identify industries and sectors which the program should target to be most effective (e.g. industry, commercial, residential). Areas to explore in the strategy include: (1) Effective load management; (2) Peak to off-peak migration; (3) Use of EE technologies and systems; and (4)The strategy would help link the program to other initiatives and explore means for financing, with the development and implementation of the program to happen in the medium and long-term.	• Coordinate/collaborate with Energy Regulatory Commission (ERC) and Philippine Economic Zone Authority (PEZA) to establish a TWG with other invited members from Distribution Utilities (DUs), National Power Corporation (NPC), and relevant private sector organizations. • Proposed DSM Circular to undergo public consultation prior to approval by the DOE Secretary. • Establish monitoring system with ERC, PEZA, National Electrification Administration (NEA), and electric DUs (PDUs and ECs) on the implementation of DSM. • Establish a TWG with NPC and NEA to develop targets and policies. • Re-establish coordination/collaboration with NPC, electric distribution companies, and utilities on policies and ongoing programs/projects on DSM. • Prepare an analytical paper setting out the framework and regulatory steps that would need to be taken to implement a comprehensive demand response strategy. • Engage with utilities and industry players.

Power sector efficiency program, Strategy	National policy, and strategy for efficiency in the power supply sector	• This strategic action was included in a draft Roadmap presented for public consultation on 24th August 2020 by the DOE. This should be strongly linked to the DSM policy and follow the DSM program (see above). • The strategy would set out and prioritize cost-effective opportunities to reduce system losses and improve efficiency and detail potential for cost-savings. • Included in the previous Roadmap (2017-2040) as a medium-term priority, it remains a high priority for the DOE to be pursued within the next five years.	• Establish a TWG to review the status of energy efficiency implementation in the sector and conduct a baseline study of the sector. • Establish a power sector energy efficiency strategy. • Conduct energy audits of PDUs, QTPs, and ECs electric power distribution lines to establish baseline systems loss and infrastructure integrity. • Conduct energy audit of NPCs-SPUGs diesel-generating facilities to establish baseline thermal efficiency and plant integrity.

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
Utility partnerships	Utility partnerships expanded to support end-user decision-making on EEC.	A strategic action aimed at developing the role of distribution utilities as key implementation partners and information providers for end-users and was also included in the 2017-2040 Roadmap. Although this has not been driven by the DOE to date, Meralco have undertaken this initiative independently, providing key energy consumption data in customers' billing statements in Metro Manila, encouraging more efficient use of energy through behaviour change. The DOE is keen to support Meralco in expanding this initiative and encourage other utilities in the Philippines to take up similar actions through establishing partnerships. The DOE could partner with utilities to develop IEC projects and/or develop tools to support behaviour change across the country.
Power sector efficiency program	EEC for the Power Sector	Issuances will be developed to ensure the efficient operation of the power sector such as through an MEPP for distribution transformers for the energy-efficient distribution of power across the country. Further, emerging energy efficient technologies will be studied for adoption in the power sector for improved operational efficiency.

Cross-Sector



Short-Term (2023-2024)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
EE Practitioners: Capacity building	EE Practitioner capacity building, including: Standardized documents Upskilling roadmap/strategy	• An ESCO-standard toolkit supporting standard processes and procedures would enable the ESCO market to deliver projects by streamlining and standardizing processes. Currently being supported by EU-ASEP, the ESCO toolkit is a high priority for the DOE. • Capacity building activities will also be conducted for EE Practitioners and related supporting institutions	• Coordinate efforts with donors on support being provided. • Create standard legal document for procuring the services of EE Practitioners. • Issue guidelines for M&V for ESCOs to increase transparency and comparability of projects. • Develop EE Practitioner accreditation and certification training module development.
	EE Practitioner certification	• Sections 12 and 13 of the EEC Act and Sections 49, 53, and 54 of its IRR provide for the requirements for the certification EE Practitioners.	• Development of training materials with experts. • Align certification with ASEAN standards. • Update database continuously with EE Practitioners, including those certified and not yet certified. • Promotion of certification through IECs.

Finance: Financial institution capacity building	Financial sector capacity building	• Many financial institutions are unfamiliar with EE projects and the business models behind them. Creating guidelines for endorsing EE projects would tackle this barrier by enabling them to appropriately assess EE projects.	• Create an Energy Efficiency Finance Program for the commercial banking sector. • Conduct information campaigns with FIs. • Provide technical assistance to FIs. • Issue the guidelines in collaboration with FIs.
Finance: New financial modalities - Scoping	Guarantee Fund and/or Revolving Fund concept development	• Guarantee Fund • While there currently has been some degree of capacity building for financial institutions, there has been a lack of actual investment into EE in the private sector. • Financing EE projects is a high priority and there is potential for LCEP to 'deep-dive' and help develop a strategy to accelerate private financing, building on the work done in the IFC Sustainable Finance Program. A strategy/action plan would pave the way for looking at innovative financing modalities including a guarantee fund, a structure and guide for stakeholder engagements, and set-up for EE finance training programs/modules. • There is interest in setting up a guarantee fund and the application of the PhilGuarantee fund for EE projects both for credit and energy savings performance may prove more effective than the development of an entirely new fund. A guarantee fund could help close this gap by reducing the risk perception for financial institutions to provide loans for EE. • Revolving Fund • The focus of a revolving fund would be for the government sector, with government FIs in a better position to use this modality. • The DOE have indicated that they are unfamiliar with what is required for this type of fund but are keen to explore the concept.	• Guarantee Fund • Develop concept note and roadmap for establishment of Guarantee Fund. • Engage with PhilGuarantee to explore the concept. • Understand the capacity building requirement of PhilGuarantee. • Engage with capacity building providers. • Consider pilot ESCO projects. • Consultation with ESCOs on guarantee needs. • Revolving Fund • Conduct a market study on successful revolving funds in other countries to establish best practice and engage with relevant stakeholders in the Philippines. • Develop concept note and roadmap for establishment of Revolving Fund. • Consider pilot projects.

		• We have identified EE finance needs that could be addressed by a revolving fund, including • Project pipeline development • Softer collateral requirements around lending • Lower/concessional interest rates on loans	
Data & MVE, Database: MVE and evaluation framework	Development of EEC database and MVE & evaluation frameworks	• Under the EEC Act, designated establishments are required to submit energy efficiency and conservation reports. The data collected from these reports will contribute to the National EEC Database (NEECD). • The comprehensive NEECD is currently under development and will serve as the repository for all EEC data, including data gathered from the implementation of programs under the EEC Act, such as PELP, GEMP, designated establishments, and others. • The GEMP database in particular would be dedicated to public sector energy efficiency with data collected from government entities and LGUs. • Where possible, sex-disaggregated data should be collected, such as those related to the composition of upper management and boards of reporting organizations.	• Establish an energy efficiency database using data collection regime and monitoring and evaluation framework developed in the short-term. • Conduct studies of emerging, advanced, and next generation energy technologies and fuel alternative/option to promote EEC using science-based data and information through international donors or procurement of experts/consultancy services. • Establish responsibility for energy efficiency data collection and sectoral frameworks containing agreed monitoring regime and stronger energy-use data protocols. • Establish enforcement regimes to ensure compliance with the standards so that projected gains from efficiency can be realised. The regimes should ensure that there is adequate resource and training for enforcement officers. • Commence regular reporting and monitoring. • Develop progress reports to ensure that any issues that arise in early implementation are addressed. They will help signpost where further work is needed, and help identify key lessons that can be learned. • Integrate PELP database to the ASEAN product database.
Gender & Development (GAD):	GAD strategy development and identification of opportunities for	• To review gender and development across all programs and identify opportunities for intervention. A toolkit for gender and development has been developed and a gender and development focal point is present within each	• Integrate as a matter of internal policy the participation of women in all aspect of IEC campaigns on EEC, procurement of EEC related services, and on the requirements for the issuance of Registration or

Strategy & opportunity identification	mainstreaming GAD in EEC	division of the DOE, however this needs to be reviewed and updated.	Certification for ESCOs, certification for ECOs, Ems, and CEAs.
Information and education campaigns (IECs): IEC including EEC in curricula, recognition awards	IECs on EEC	• An ongoing priority of the DOE, IECs for EEC will contribute to further uptake of energy-efficient practices and support awareness-raising around the requirements of the EEC Act.	• Develop and implement state-of-the-art IECs. • Develop Terms of Reference in the procurement of IEC program developer/development. • Develop IEC program and information materials as applicable for each sector.
	Adoption of EEC into school and university curricula	• Progress has been made towards including EEC in the curricula as it is also now mandated in the EEC Act. As there had been issues with financing the revision of curricula in schools, the budget constraints that may affect this should be examined in the short-term to understand feasibility of rollout by the Department for Education.	• Collaborate with the Commission on Higher Education (CHED) on the development and adoption of Energy Management as an elective subject based on ISO 50001 and 50015 frameworks in the electrical and mechanical engineering courses. • Collaboration with CHED on the inclusion of the *Guidelines on the Energy Conserving Design for Buildings* in the architectural, electrical, and mechanical engineering course as an elective subject. • Collaborate with CHED on the development of training regulations and modules in higher education for a Certificate Training Program for Energy Managers.
	EEC recognition awards	• This is included as an EPMPD target milestone and is meant to incentivize individuals and companies. The DOE aims to harmonize their criteria with the regional ASEAN Energy Awards.	• Develop guidelines and criteria for various award categories including: (a) Energy Efficient Building Award; (b) Energy Management Award for Buildings and Industries; (c) Green Building Award; (d) Energy Manager/Enercon Officer Award; and (e) Special Award Categories (including gender and development). • SGLG (Seal of Good Local Governance for LGUs) – include Gender and Development in the criteria, as well as energy efficiency and conservation. This could set a precedent for special awards and recognition of the role of women.

Medium-Term (2025-2028)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions		
	Full Strategic Action	**Description**	**Activities**
EE Practitioners: Capacity building	EE Practitioner capacity building through the review and update of existing Training Regulations (TRs)	• Review of existing TRs for the Certification of EE Practitioners to equip EE practitioners with the latest developments in EE for both new and recertification applications.	• Create a TWG to review EE Practitioner TRs • Issue updated TRs for certification
Finance: New financial modalities Capacity Building	Development of concept and implementation of new financial modalities	• Conduct of workshops and other activities to capacitate Financial Institutions on new financial modalities	• Conduct of capacity building workshops • Issuance of guidelines for financial institutions to follow for the assessment of EE projects
Data & MVE, Database: MVE and evaluation framework	Enhancement of EEC database	• Further develop the EEC database to accommodate the latest developments in EEC and other improvements.	• Update the energy efficiency database with up-to-date information on EEC and other necessary features.
GAD: Mainstreaming	GAD mainstreaming in projects and programs	• Mainstreaming of gender and development in projects/programs is currently limited. Progress needs to be made towards this and should be explored.	• The GAD Strategic Framework, which affirms the DOE's role in providing directives and confirms the commitment of the DOE in providing equal opportunities and participation to both men and women in the energy sector, as well as protecting and fulfilling their rights. • Integrating the twin goals of gender equality and women empowerment in the energy sector policies, plans, programs, and projects.

			• The GAD Checklist serves as a filter and rating worksheet for assessing the gender sensitivity or responsiveness of the program/project design. • Mainstreaming gender equality and women empowerment perspectives in the operation and main mandates of the DOE, its attached agencies, and other energy offices.
Information and education campaigns (IECs)	Enhance strategic information campaign strategy	• Continued development of the strategic information campaign strategy for IECs on EEC will contribute to further uptake of energy-efficient practices and support awareness-raising around the requirements of the EEC Act.	• Review existing strategy and accomplishments of IEC activities.. • Establish key points of improvement on current IEC strategy • Implement improved IEC program and information materials as applicable for each sector.
Waste: Strategy for waste management	Waste management strategy development for the safe disposal and recycling of obsolete equipment	• To review waste management strategy related to the disposal of non-energy efficiency equipment, including coordination with DENR. • Explore programs to support circular economy and equipment trade-in schemes for safe disposal and recycling.	• Develop/establish policies on waste management in anticipation of waste from replacement for more efficient products. • Collaborate with DENR and recycling facilities in the development, implementation, and information campaign of waste management programs/projects. • Collaborate with manufacturers/assemblers/suppliers of energy-consuming products in the implementation of buy-back schemes. • Conduct waste management and technology studies on replacement for more efficient ECPs.

Long-Term (2029-2050)

Program/Theme, Strategic Action per Roadmap	Roadmap Strategic Actions	
	Full Strategic Action	**Description**
EE Practitioners: Capacity building	Continued development of EE Practitioner TRs and ESCO Guidelines	• The continued development of TRs and guidelines will develop a strong energy efficiency sector that is capable to cater to the growing needs of the various sectors. • The EPMPD, in collaboration with relevant government agencies and experts on EEC, will form TWGs to for the review and further development of TRs
Finance	Improved financing modalities	• New and streamlined financial modalities will be continuously sought to provide the necessary investments to help sustain a healthy EEC market.
Data & MVE: Knowledge management	Development of an EEC knowledge management framework	• EPRED is responsible for the institutionalization of a comprehensive EEC knowledge management system. As stated in the EEC Act, EPRED shall spearhead the creation and management of the comprehensive database with entries from the other divisions (i.e. GEMP data by EPSMD, PELP data by EPRED, etc.). • This strategy will target all EEC stakeholders and will harmonize EEC knowledge management, which will be significant in the conduct of IEC campaigns/materials, program implementation, policy/regulatory improvements, ease of data accessibility, and more.
GAD: Mainstreaming	Equal opportunity between genders	• In the long-term, the adoption of gender equality for EEC activities is expected to be in full swing, seeing the equal participation of all genders in the different aspects of EEC.
Information and education campaigns (IECs)	Sustained EEC Information Campaigns	• IECs will continue to be one of the core activities of the NEECP to spread the message of EEC across the country. • Different strategies will be developed in order to achieve the greatest impact for every activity.
Waste: Strategy for waste management	Inclusion of the latest EEC technologies	• To ensure the proper disposal of all waste accrued EEC-related projects and activities, the DOE will continue to adopt the latest technologies and energy-consuming products in the waste management guidelines.


1/2