



# **PHILIPPINE ENERGY PLAN 2023 - 2050 VOLUME III**

Transitioning to Reliable,  
Clean, and Resilient Energy



Republic of the Philippines  
**DEPARTMENT OF ENERGY**





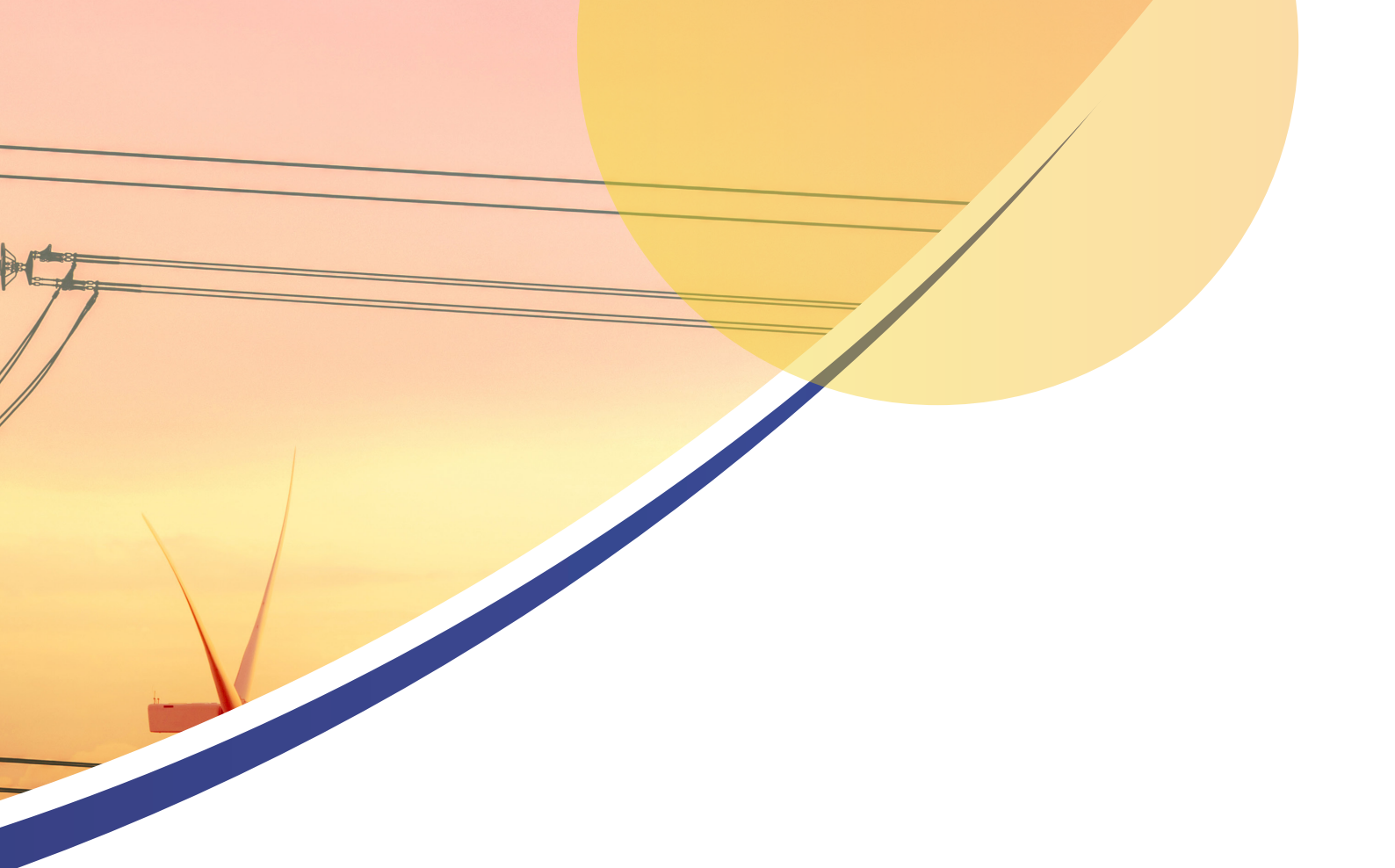
# Preface

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*Charting the course towards a clean energy future extends beyond the mere utilization of clean and indigenous energy resources and institutionalization of energy-efficient practices. It necessitates the implementation of inclusive strategies to foster long-term energy security and sustainability.*

*This volume highlights the **Strategic Focus Areas**, outlining the straightforward path for the energy sector to realize the envisioned Clean Energy Scenario. The transition to a low-carbon future is further supported by complementary strategies, including the deployment of a nuclear energy program, adoption of robust environmental management approaches, enhancement of the resiliency and security of existing infrastructures, collaborative involvement of attached agencies, and sustained engagement in international energy initiatives.*

*Prioritizing these strategic focus areas enables the sector to advance its clean energy transition in consonance with the overarching goal of attaining a sustainable and secure energy landscape.*



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# Abbreviations and Acronyms

|                 |   |                 |   |
|-----------------|---|-----------------|---|
| ACAFTA          | ASEAN-Canada Free-Trade   | CIF             | Climate Investment Funds  |
| ACE             | ASEAN Centre for Energy   | CIFF            | Children's Investment Fund Foundation   |
| ACT             | Accelerating Coal Transition  | CKT-KMS         | Circuit Kilometer   |
| ADB             | Asian Development Bank  | CM              | Combined Margin   |
| AEBF            | ASEAN Energy Business Forum   | CMSP            | Cybersecurity Management Systems Project  |
| AEC             | ASEAN Energy Cooperation  | CMTA            | Customs Modernization and Tariff Act  |
| AF              | Adaptation Fund   | CMVR            | Compliance Monitoring and Validation Report   |
| AFTA            | ASEAN Free Trade Area   | CNC             | Certificate of Non-Coverage   |
| AMEM            | ASEAN Ministers on Energy Meeting   | CNE             | Civilian Nuclear Energy   |
| AMS             | ASEAN Member States   | CO <sub>2</sub> | Carbon Dioxide  |
| AMTB            | ASEAN Matters Technical Board   | COC             | Coal Operating Contract   |
| ANSN            | Asian Nuclear Safety Network  | COP             | Conference of Parties   |
| APA             | Aotearoa Plan of Action   | COP21           | 21st Conference of Parties  |
| APAEAC          | ASEAN Plan of Action for Energy Cooperation   | CSF             | Cybersecurity Framework   |
| APEC            | Asia-Pacific Economic Cooperation   | CSP             | Competitive Selection Process   |
| APEC-ERTF       | Asia-Pacific Economic Cooperation – Energy Resiliency Task Force                          | CSR             | Corporate Social Responsibility   |
|                 |   | CTCN            | Climate Technology Center and Network   |
| APG             | ASEAN Power Grid  | CTF             | Clean Technology Fund   |
| APSA            | ASEAN Petroleum Security Agreement  | CVMR            | Compliance Monitoring and Validation Report   |
| ARC             | Access to Affordable Energy, Reliability and Resiliency, and Clean and Sustainable Energy | DA              | Department of Agriculture   |
| ASCOPE          | ASEAN Council for Petroleum   | DC              | Department Circular   |
| ASEAN           | Association of Southeast Asian Nations  | DECC            | Department of Energy and Climate Change   |
| ASEP            | Access to Sustainable Energy Program  | DENR            | Department of Environment and Natural Resources                                       |
| ATC-PMC         | Anti-Terrorism Council-Program Management Center  | DepEd           | Department of Education   |
|                 |   | DESNZ           | Department for Energy Security and Net Zero   |
| AWFP            | Annual Work and Financial Plan  | DFA             | Department of Foreign Affairs   |
| AWIT-FE         | Agriculture, Waste, Industry, Transport, Forestry and Energy                              | DICT            | Department of Information and Communications Technology                               |
| AZEC            | Asia Zero Emission Community  | DILG            | Department of Interior and Local Government   |
| BAU             | Business-as-Usual   | DLSU            | De La Salle University  |
| BCP             | Business Continuity Plan  | DND             | Department of National Defense  |
| BEIS            | Business, Energy, and Industrial Strategy   | DOE             | Department of Energy  |
| BIMP            | Brunei Darussalam-Indonesia-Malaysia-Philippines  | DOF             | Department of Finance   |
|                 |   | DOH             | Department of Health  |
| BIMP-EAGA       | Brunei Darussalam-Indonesia-Malaysia-Philippines -East ASEAN Growth Area                  | DOJ             | Department of Justice   |
|                 |   | DOST            | Department of Science and Technology  |
| BLEP            | Barangay Line Enhancement Program   | DPP             | Disaster Preparedness Thematic Pillar   |
| BM              | Build Margin  | DPP             | Diesel Power Plant  |
| BOI             | Board of Investments  | DP              | Development Partner   |
| BTR             | Biennial Transparency Reports   | DREAMS          | Development for Renewable Energy Applications Mainstreaming and Market Sustainability |
| BUR             | Biennial Update Report  | DRFI            | Disaster Risk Financing and Insurance   |
| CAF             | Cybersecurity Assessment Framework  | DTI             | Department of Trade and Industry  |
| CALABARZON      | Cavite, Laguna, Batangas, Rizal, and Quezon   | DTI-BOI         | Department of Trade and Industry-Board of Investment                                  |
| CAP             | Cancun Adaptation Framework   |                 |   |
| CAPEX           | Capital Expenditure   | DTI-STMO        | Department of Trade and Industry – Strategic Trade Management Office                  |
| CBK             | Caliraya-Botocan-Kalayaan Hydropower Facility   | DU              | Distribution Utility  |
| CCC             | Climate Change Commission   | EBT             | Energy Balance Table  |
| CCUS            | Carbon Capture Utilization and Storage  | ECA             | Environmentally Critical Area   |
| CDM             | Clean Development Mechanism   | ECC             | Environmental Compliance Certificate  |
| CEDI            | Clean Energy Demand Initiative  | ECERF           | Electric Cooperative Emergency and Resiliency Fund                                    |
| CEFIA           | Cleaner Energy Future Initiative  |                 |   |
| CEFIM           | Clean Energy Finance and Investment Mobilisation  | ECODE           | Energy Conserving Design  |
| CEM             | Clean Energy Ministerial  | ECOTECH         | Economic and Technical Cooperation  |
| CER             | Certified Emission Reduction  | ECP             | Environmentally Critical Project  |
| CES             | Clean Energy Scenario   | EC              | Electric Cooperative  |
| CH <sub>4</sub> | Methane Gas   | EDIMS           | Energy Disaster Information Management System   |
| CHED            | Commission on Higher Education  | EEC             | Energy Efficiency and Conservation  |
| CHEPP           | Casacnan Hydroelectric Power Plant  | EIA             | Environmental Impact Assessment   |
|                 |   | eICPM           | Enhanced Integrated Computerized Planning Model                                       |
|                 |   | EIS             | Environmental Impact Statement  |
|                 |   | EMB             | Environmental Management Bureau   |
|                 |   | EMM             | Energy Ministers Meeting  |
|                 |   | EMoP            | Environmental Monitoring Program  |
|                 |   | EMP             | Environmental Management Plan   |
|                 |   | EO              | Executive Order   |

|         |  |         |  |
|---------|--|---------|--|
| EOC     | Emergency Operation Center                             | IPCC    | Intergovernmental Panel on Climate Change                  |
| EPIMB   | Electric Power Industry Management Bureau              | IPEF    | Indo-Pacific Economic Framework                            |
| EPIRA   | Electric Power Industry Reform Act                     | IPPU    | Industrial Process and Product Use                         |
| EPR     | Emergency Preparedness and Response                    | IRRP    | Integrated Resource and Resilience Planning                |
| EPRMP   | Environmental Performance Report and Management Plan   | ISSAS   | IAEA Safeguards and SSAC Advisory Service                  |
| ERA     | Energy Resilience Assessment Framework and Methodology | JC      | Joint Convention   |
| ERA     | Energy Resilience Assessment Framework and Methodology | JCBC    | Joint Commission for Bilateral Cooperation                 |
| ERC     | Energy Regulatory Commission                           | JET     | Just Energy Transition                                     |
| EREA    | Energy Resiliency Excellent Awards                     | KP      | Kyoto Protocol   |
| ERMS    | Energy Resiliency Management System                    | KSA     | Kingdom of Saudi Arabia                                    |
| ERP     | Energy Resiliency Policy                               | kWp     | kilowatt-peak  |
| ERP     | Emergency Response Plan                                | LCCDR   | Low Carbon and Climate- and Disaster- Resilient            |
| ERS     | Energy Resilience Scorecard                            | LDF     | Loss and Damage Fund                                       |
| ERTF    | Energy Resiliency Task Force                           | LGU     | Local Government Unit                                      |
| ESB     | Energy Supply Base                                     | LNG     | Liquefied Natural Gas                                      |
| ES-CERT | Energy Sector Computer Emergency Response Team         | LOI     | Letter of Intent   |
| ESCO    | Energy Service Company                                 | LTMS    | Lao PDR-Thailand-Malaysia-Singapore                        |
| ESCoC   | Energy Sector Command Center                           | MDB     | Multilateral Development Banks                             |
| ESEOC   | Energy Sector Emergency Operations Center              | MEMR    | Ministry of Energy, Minerals, and Resources - Indonesia    |
| ESI     | Energy Security Initiatives                            | MEP     | Missionary Electrification Plan                            |
| ESP     | Energy Secure Philippines                              | MFN     | Most Favored Nation  |
| ETC     | Energy Transition Council                              | MGSA    | Microgrid Systems Act                                      |
| ETF     | Enhanced Transparency Framework                        | MGSP    | Microgrid Service Provider                                 |
| ETFE    | Energy Task Force Elections                            | MinDA   | Mindanao Development Authority                             |
| ETM     | Energy Transition Mechanism                            | MKA     | Murang Kuryente Act  |
| ETP     | Energy Transition Partnership                          | MMEIRS  | Metro Manila Earthquake Impact Reduction Study             |
| EU      | European Union   | MMT     | Multi-partite Monitoring Team                              |
| EV      | Electric Vehicle                                       | MNRE    | Ministry of New and Renewable                              |
| EWG     | Energy Working Group                                   | MOA     | Memorandum of Agreement                                    |
| FAP     | Foreign Assisted Project                               | MOU     | Memorandum of Understanding                                |
| FDA     | Food and Drug Administration                           | MP      | Mitigation Plan  |
| FFMS    | FIT-All Fund Management System                         | MS      | Member States  |
| FGD     | Focus Group Discussion                                 | MSc     | Master of Science  |
| FIRB    | Fiscal Incentives Review Board                         | MVA     | Megavolt-Ampere  |
| FIT     | Feed-in-Tariff   | MVIP    | Mindanao-Visayas Interconnection Project                   |
| FIT-All | Feed-in-Tariff Allowance                               | MW      | Megawatt   |
| FME     | Force Majeure Event                                    | N2O     | Nitrous Oxide  |
| FOLU    | Forestry and other Land Use                            | NAP     | National Adaptation Plan                                   |
| FS      | Feasibility Study                                      | NAP-CIP | National Action Plan on Critical Infrastructure Protection |
| GAA     | General Appropriations Act                             | NC      | National Communication                                     |
| GCF     | Green Climate Fund                                     | NCCAP   | National Climate Change Action Plan                        |
| GCG     | Governance Commission for GOCC                         | NCMOU   | MOU Concerning Strategic Civil Nuclear Cooperation         |
| GEA     | Green Energy Auction                                   | NCSP    | National Cybersecurity Plan                                |
| GEAP    | Green Energy Auction Program                           | NDC     | Nationally Determined Contribution                         |
| GEF     | Global Environment Facility                            | NDRRMC  | National Disaster Risk Reduction and Management Council    |
| GHG     | Greenhouse Gas   | NDRRMF  | National Disaster Risk Reduction and Management Framework  |
| GMMA    | Greater Metro Manila Area                              | NDRRMP  | National Disaster Risk and Reduction Management Plan       |
| GOCC    | Government-owned and Controlled Corporation            | NEA     | National Electrification Administration                    |
| GSIS    | Government Service Insurance System                    | NEAT    | Nuclear Energy Awareness Training                          |
| GSPA    | Gas Sales Purchase Agreement                           | NECP    | National Energy Contingency Plan                           |
| GST     | Global Stocktake                                       | NEC-SSN | Nuclear Energy Cooperation Sub-Sector Network              |
| GUC     | Grants Under Contract                                  | NEDA    | National Economic and Development Authority                |
| HAPUA   | Heads of ASEAN Power Utilities Authorities             | NEP     | Nuclear Energy Program                                     |
| HDF     | Hydrogene de France                                    | NEP-IAC | Nuclear Energy Program Inter-Agency Committee              |
| HOR     | House of Representatives                               | NEPIO   | Nuclear Energy Program Implementing Organization           |
| HRD     | Human Resource Development                             | NFSCC   | National Framework Strategy on Climate Change              |
| HSSE    | Health-Safety-Security-Environment                     | NGAs    | National Government Agencies                               |
| IAEA    | International Atomic Energy Agency                     | NGCP    | National Grid Corporation of the Philippines               |
| ICT     | Information and Communications Technology              | NGEF    | National Grid Emission Factor                              |
| IEC     | Information, Education, and Communication              | NGO     | Non-Governmental Organization                              |
| IECC    | Inter-Agency Energy Contingency Committee              | NIA     | National Irrigation Administration                         |
| IMS     | Integrated Management System                           |         |  |
| INIR    | Integrated Nuclear Infrastructure Review               |         |  |
| IOE     | Instruments of Extension                               |         |  |
| Ios     | International Organizations                            |         |  |
| IP      | Investment Plan  |         |  |



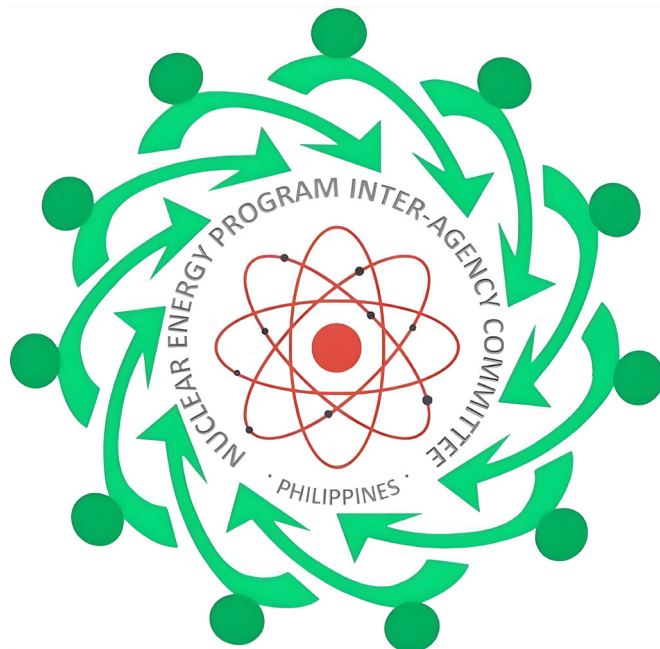
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| NIP      | Nuclear Infrastructure Program   | RE        | Renewable Energy   |
| NIPAS    | National Integrated Protected Areas System   | RECPA     | Renewable Energy Certificates  |
| NIRC     | National Internal Revenue Code of 1997   | REF       | Reference Scenario   |
| NIST     | National Institute of Standards and Technology                                       | REPP      | Regional Energy Policy and Planning  |
| NOGCP    | National Oil and Gas Contingency Plan  | REP-SSN   | Regional Energy Policy and Planning Sub-Sector Network                       |
| NPC      | National Power Corporation   | RFAT      | Resiliency Field Assessment Team   |
| NPC      | National Police College  | RGT       | Regasification Terminal  |
| NPCP     | National Power Contingency Plan  | ROW       | Right-of-Way   |
| NPC-SPUG | NPC-Small Power Utilities Group  | RRF       | Rapid Response Facility  |
| NPP      | New Power Provider   | RRIP      | Rehabilitation and Recovery Investment Plan                                  |
| NRE      | New and Renewable Energy   | SBI       | Subsidiary Body for Implementation   |
| NREL     | National Renewable Energy Laboratory   | SBSTA     | Subsidiary Body for Scientific and Technological Advice                      |
| NREP     | National Renewable Energy Program  | SC        | Service Contract   |
| NSP      | National Security Policy   | SC        | Sub-Committee  |
| NTER     | National Total Electrification Roadmap   | SDG       | Sustainable Development Goal   |
| NTF-WPS  | National Task Force for the West Philippine Sea                                      | SDP       | Social Development Plan  |
| OECD     | Organization for Economic Cooperation and Development                                | SEED      | Site and External Events Design  |
| OM       | Operating Margin   | SEP       | Sitio Electrification Program  |
| OP       | Office of the President  | SER       | Self-Evaluation Report   |
| OPS      | Office of the Press Secretary  | SHS       | Solar Home System  |
| OSW      | Offshore Wind  | SI        | Stakeholder's Involvement  |
| PA       | Paris Agreement  | SMART     | System-integrated Modular Advanced Reactor                                   |
| PAGASA   | Philippine Atmospheric, Geophysical and Astronomical Services Administration         | SMR       | Small Modular Reactor  |
| PAM      | Policies and Measure   | SO        | System Operator  |
| PCP      | Power Contingency Plan   | SOC       | Security Operations Center   |
| PD       | Presidential Decree  | SOME      | Senior Officials Meeting on Energy   |
| PDP      | Philippine Development Plan  | SONA      | State of the Nation Address  |
| PDRF     | Philippine Disaster Resilience Foundation, Inc.                                      | SPUG      | Small Power Utilities Group  |
| PDRRM    | Philippine Disaster Risk Reduction and Management                                    | SSAC      | State System Accountancy for and Control of Nuclear Materials                |
| PEIC     | Power and Energy Infrastructure Cluster  | TAGP      | Trans-ASEAN Gas Pipeline   |
| PEISS    | Philippine Environmental Impact Statement System                                     | TC        | Tariff Commission  |
| PEP      | Philippine Energy Plan   | tCO2      | Ton of Carbon Dioxide  |
| PEPC     | Philippine Emissions Pathways Calculator   | TESDA     | Technical Education and Skills Development Authority                         |
| PESC     | Philippine Electric Supply Chain   | TFEC      | Total Final Energy Consumption   |
| PGHGIMRS | Philippine Greenhouse Gas Inventory Management and Reporting System                  | TFER      | Task Force on Energy Resiliency  |
| PH-CERT  | Philippine National Computer Emergency Response Team                                 | TFK       | Task Force 'Kapatid'   |
| PHIVOLCS | Philippine Institute of Volcanology and Seismology                                   | TNC       | Third National Communication   |
| PIP      | Power Integration Project  | TOR       | Terms of Reference   |
| PJ       | Petajoule  | TPES      | Total Primary Energy Supply  |
| PMO-ERG  | Program Management Office for Earthquake Resiliency of the Greater Metro Manila Area | TransCo   | National Transmission Corporation  |
| PNOC     | Philippine National Oil Company  | TS        | Transport Security   |
| PNOC EC  | PNOC Exploration Corporation   | TWG       | Technical Working Group  |
| PNOC RC  | PNOC Renewables Corporation  | TWG-ESER  | Technical Working Group on Energy Sector Earthquake Resiliency               |
| PNPA     | Philippine National Police Academy   | US        | United States  |
| PPSC     | Philippine Public Safety College   | UAE       | United Arab Emirates   |
| PPT      | People, Process, and Technology  | UC        | Universal Charges  |
| PREMS    | Philippine RE Market System  | UC-SD     | Universal Charge - Stranded Debt   |
| PSA      | Philippine Statistics Authority  | UK        | United Kingdom   |
| PSALM    | Power Sector Assets and Liabilities Management Corporation                           | UNDP      | United Nations Development Program   |
| PSC      | Petroleum Service Contract   | UNDRR     | United Nations Disaster Risk Reduction                                       |
| PV 2040  | Putrajaya Vision 2040  | UNFCCC    | United Nations Framework Convention on Climate Change                        |
| PVM      | Photovoltaic Mainstreaming   | UNOPS     | United Nations Office for Project Services                                   |
| PWR      | Pressurized Water Reactors   | UPD       | University of the Philippines-Diliman  |
| QMS      | Quality Management System  | USAID-ESP | United States Agency for International Development-Energy Secure Philippines |
| R&D      | Research and Development   | VRA       | Vulnerability and Risk Assessment  |
| RA       | Republic Act   | WPS       | West Philippine Sea  |
| RADPLAN  | Radiological Emergency Preparedness and Response Plan                                | WTO       | World Trade Organization   |
| RCEP     | Regional Comprehensive Economic Partnership  | WVF       | West Valley Fault  |
| RCP      | Resiliency Compliance Plan   |           |  |

# STRATEGIC FOCUS AREAS

## A. PHILIPPINE NUCLEAR ENERGY PROGRAM

The DOE continues to work towards a sustainable future through a technology-neutral approach to develop clean alternative energy sources to provide greater energy security, stability, reliability, and reasonably priced energy for the country. This involves diversification of energy sources to include nuclear power as a long-term energy option. The DOE acknowledges nuclear energy as an alternative energy source, and thus actively exploring its feasibility to support sustainable development agenda and growth of the country.

In 2016, the DOE established the Nuclear Energy Program Implementing Organization (NEPIO) to study the feasibility of including nuclear power in the country's generation mix. To have a whole of government approach in implementing a nuclear energy program (NEP), the DOE-NEPIO expanded its composition through the creation of the NEP Inter-Agency Committee (NEP-IAC), which was constituted with the issuance of Executive Order (EO) 116 in July 2020. The DOE chairs the NEP-IAC and the DOST serves as the vice-chair. The NEP-IAC is composed of 24-member government agencies and divided into six (6) sub-committees (SCs) working together to implement the country's NEP. The SCs clustered the 19 Infrastructure Issues of the International Atomic Energy Agency (IAEA) Milestone Approach. The SCs have been assigned to implement various undertakings to address issues specific to their areas of concern, as shown in *Figure 1*.

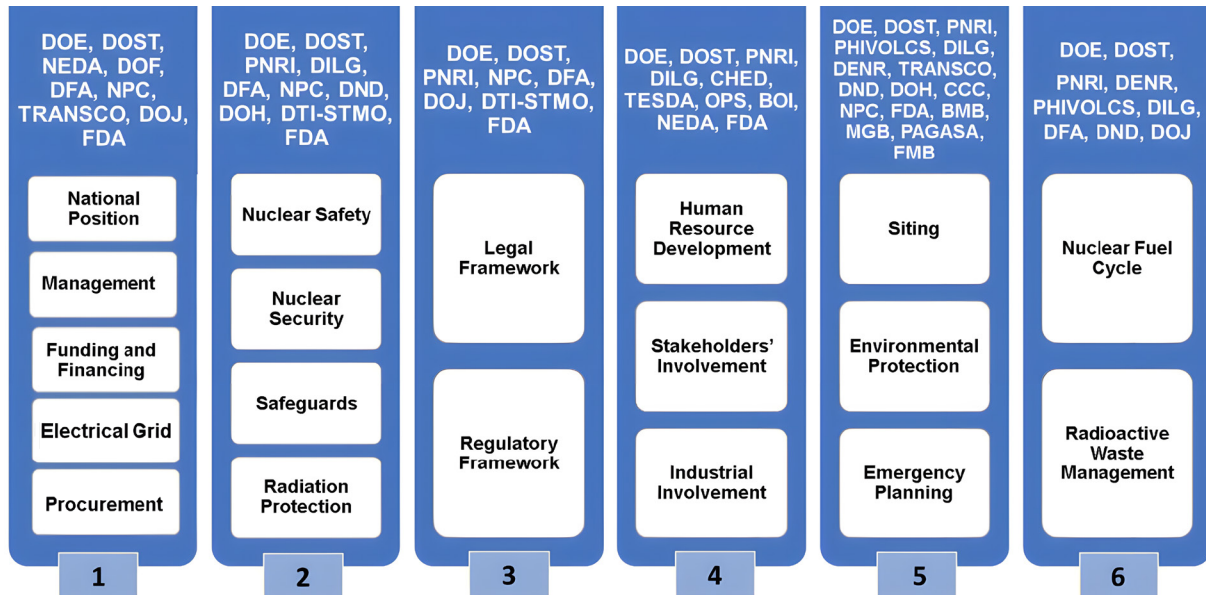


NEP-IAC Logo as designed by the Committee.



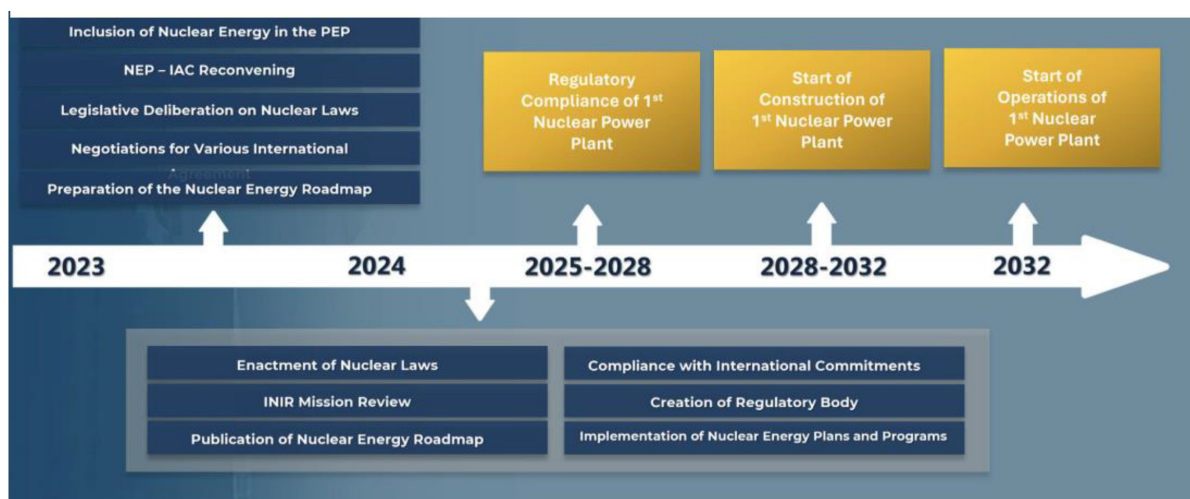


Figure 1. NEP-IAC Sub-Committees



**Issuance of National Position.** Since 2020, the NEP-IAC has already started laying out the foundational regulatory framework for the NEP, which led to the issuance of the country's National Position by virtue of EO 164 signed and issued in February 2022. Driven by the current administration's directive during the first State of the Nation Address (SONA) of President Ferdinand Marcos, Jr. in July 2023 on the need to re-examine the country's strategy toward nuclear energy, the DOE has intensified its efforts on the development of the NEP in compliance with the IAEA 19 infrastructure requirements. The NEP timeline is aligned with the IAEA Milestone Approach, as shown in Figure 2.

Figure 2. NEP Timeline (2023-2032)



**Accomplishments for Milestone 1.** Under the current administration, the DOE, as the Chair of the NEPIAC, called for the updating of the NEP Roadmap and the reporting of the various activities by the SCs. At the end of 2023, various SCs have reported their accomplishments, as shown in *Table 1*.

Table 1. SC Accomplishments 2022 to 2023

| Infrastructure Issue           | Activities  |
|--------------------------------|---|
| National Position              | <ul style="list-style-type: none"> <li>Accomplished with the issuance of EO 164, s. 2022.</li> <li>On-going preparation for Phases 2 and 3.</li> </ul>  |
| Nuclear Safety                 | <ul style="list-style-type: none"> <li>Completed review of nuclear power plant regulation.</li> </ul>   |
| Management                     | <ul style="list-style-type: none"> <li>Completed management and leadership system assessment.</li> </ul>  |
| Funding and Financing          | <ul style="list-style-type: none"> <li>Conducted knowledge sharing activities on financing large scale infrastructure.</li> </ul>   |
| Legal Framework                | <ul style="list-style-type: none"> <li>Drafted Comprehensive Nuclear legislation.</li> <li>Continuous international cooperation and ratification of treaties and conventions.</li> </ul>  |
| Safeguards                     | <ul style="list-style-type: none"> <li>Continuous monitoring of nuclear installations under the Comprehensive Safety Agreement.</li> </ul>  |
| Radiation Protection           | <ul style="list-style-type: none"> <li>Completed Report on Radiation Hazards.</li> <li>Developed National Registry.</li> </ul>  |
| Regulatory Framework           | <ul style="list-style-type: none"> <li>Continuous push for the establishment of an independent nuclear regulatory body.</li> </ul>  |
| Electrical Grid                | <ul style="list-style-type: none"> <li>Conducted capacity building on integration of nuclear power plants to power systems.</li> </ul>  |
| Human Resource Development     | <ul style="list-style-type: none"> <li>Conducted capacity building activities for the NEP-IAC SC.</li> <li>Completed available domestic workforce survey.</li> <li>Assessed the human resource needs of the independent nuclear regulatory body towards the development of training programs and building a pool of local regulators.</li> <li>Assessed the human resource needs of nuclear power plant operators.</li> <li>Coordinated with the schools and universities for subjects, programs and courses on nuclear science and engineering.</li> </ul> |
| Stakeholders' Involvement      | <ul style="list-style-type: none"> <li>Established Core Communications Team.</li> <li>Trained communicators or spokesperson for nuclear energy.</li> <li>Conducted preparatory activities of the conduct of Public Perception Survey on Nuclear Energy.</li> </ul>  |
| Site and Supporting Facilities | <ul style="list-style-type: none"> <li>Assessed eleven (11) potential nuclear power plant sites nationwide.</li> </ul>  |
| Environmental Protection       | <ul style="list-style-type: none"> <li>Conducted workshop on environmental impact assessment for nuclear power plants.</li> <li>Developed Environmental Impact Statement Scoping and Screening Form/Checklist for nuclear power plants.</li> </ul>  |
| Emergency Planning             | <ul style="list-style-type: none"> <li>Drafted the National Nuclear or Radiological Emergency Preparedness and Response Plan (RADPLAN).</li> </ul>  |
| Nuclear Security               | <ul style="list-style-type: none"> <li>Developed Protocol on Management of Information.</li> <li>Drafted Memorandum of Agreement on Nuclear Security Events.</li> </ul>   |
| Nuclear Fuel Cycle             | <ul style="list-style-type: none"> <li>Determined domestic available nuclear materials and reliable and responsible foreign suppliers.</li> </ul>   |
| Radioactive Waste Management   | <ul style="list-style-type: none"> <li>Accomplished low/intermediate level and high-level waste (disposal option).</li> </ul>   |
| Industrial Involvement         | <ul style="list-style-type: none"> <li>Developed National Policy for the Promotion of Nuclear Energy.</li> <li>Continuous review of investment incentives.</li> </ul>   |
| Procurement                    | <ul style="list-style-type: none"> <li>Conducted knowledge sharing activities for nuclear power plant infrastructure procurement.</li> </ul>  |



**Signing of the 123 Agreement.** The Philippines and the United States (U.S.) signed the Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy or the 123 Agreement in November 2023 in San Francisco, California, U.S. It is considered as the fastest 123 Agreement negotiations completed in seven (7) months.

The 123 Agreement, once entered into force, will allow the transfer of information, nuclear material, equipment and components directly between the Philippines and the U.S. or through persons authorized by their respective authorities to engage in transfer activities, which will support potential nuclear power projects with the U.S. providers.

The signing of the 123 Agreement is also a reflection of the enduring cooperation between the two (2) countries on utilizing civilian nuclear energy across the spectrum of its applications both for power and non-power uses, such as in medicine, agriculture, and industry.

**Targets for Milestone 2.** Under the Project Development activities under Milestone 2 (2024-2028), the NEP-IAC through its SCs is working toward the enactment of the country's nuclear laws, compliance with international commitments, completion of another INIR Mission Review, operationalization of the nuclear regulatory body, publication, dissemination and implementation of the NEP Roadmap and Action Plan. The NEP-IAC will also work with the regulator in the accomplishment of the identified actions/targets. Key targets under Milestone 2 include regulatory compliance of the country's nuclear power plant (2025-2028) and construction (2028-2032) as shown in Table 2.



*President Ferdinand Marcos Jr. serving as witness in the signing of the 123 Agreement between DOE Secretary Raphael P.M. Lotilla, on behalf of the Philippines, Chairperson of the NEP-IAC and Secretary of State Antony J. Blinken, on behalf of the USA on November 2023 in San Francisco, CA*

**Table 2. SC Targets for 2024 to 2032**

| Infrastructure Issue       | Activities  |
|----------------------------|---|
| National Position          | <ul style="list-style-type: none"> <li>Creation of an office to oversee the implementation of the NEP based on the IAEA Milestone Approach.</li> <li>Establish a nuclear power plant contracting approach and the regulatory body's commitments and obligations.</li> <li>Continue assessment of the effectivity of the National Policy and</li> <li>Pursue long-term international cooperation.</li> </ul>   |
| Nuclear Safety             | <ul style="list-style-type: none"> <li>Draft the nuclear power plant regulations.</li> <li>Conduct training programs for regulators, operators, and technical support organizations.</li> <li>Establish a policy on interactions and continue policy review.</li> </ul>   |
| Management                 | <ul style="list-style-type: none"> <li>Establish the management systems for all key organizations and for all operations with accreditation to be obtained.</li> <li>Determine contract specifications and criteria.</li> <li>Develop a verification mechanism of construction and handover system, structure and components.</li> </ul>  |
| Funding and Financing      | <ul style="list-style-type: none"> <li>Develop a reliable funding and financing mechanism plan to cover radioactive waste management, long-term spent fuel management, decommissioning, and compensation for nuclear damage.</li> </ul>   |
| Legal Framework            | <ul style="list-style-type: none"> <li>Ratify related international conventions.</li> <li>Enact or amend other legislations affecting the implementation of the NEP.</li> <li>Continue to pursue new international cooperation on legal framework.</li> </ul>   |
| Safeguards                 | <ul style="list-style-type: none"> <li>Continue monitoring of nuclear power plants under the Comprehensive Safeguards Agreement.</li> <li>Conduct Expert Mission on Safeguards Assessment.</li> </ul>   |
| Radiation Protection       | <ul style="list-style-type: none"> <li>Revise the regulations on Radiation Protection.</li> </ul>   |
| Regulatory Framework       | <ul style="list-style-type: none"> <li>Develop regulatory policies.</li> <li>Continue to pursue international cooperation on nuclear regulation.</li> </ul>   |
| Electrical Grid            | <ul style="list-style-type: none"> <li>Evaluate the grid (main grid and off-grid) on the requirements of a nuclear power plant and the transmission facilities for the possible sites of the nuclear power plant.</li> <li>Study the inclusion of a nuclear power plant in Mindoro Island.</li> <li>Evaluate the installation of nuclear power plant in Palawan.</li> </ul>   |
| Human Resource Development | <ul style="list-style-type: none"> <li>Continue capacity building activities for the NEP-IAC members, regulators, and potential nuclear power plant operators.</li> <li>Continue engagement of human resource stakeholders, vocational/technical schools for re-tooling of skilled personnel for nuclear power plant competence.</li> <li>Include nuclear energy subject in secondary school.</li> <li>Develop and implement undergraduate and graduate programs in nuclear science and engineering.</li> </ul> |

**Table 2. SC Targets for 2024 to 2032**

|                                |  |
|--------------------------------|--|
| Stakeholders' Involvement      | <ul style="list-style-type: none"> <li>Conduct public perception survey on nuclear energy on a regular basis including in areas considered as potential sites for nuclear power plants.</li> <li>Implement communication plan and stakeholders' engagement strategy based on the results of the public perception survey on nuclear energy.</li> </ul>   |
| Site and Supporting Facilities | <ul style="list-style-type: none"> <li>Assess / evaluate candidate sites.</li> <li>Establish ranking criteria for the selection of sites.</li> <li>Conduct a workshop for site assessment reports and desktop evaluation of new potential sites.</li> <li>Identify suitable sites and endorsed selected sites for site characterization.</li> <li>Conduct of Site and External Events Design (SEED) Review of IAEA.</li> </ul> |
| Environmental Protection       | <ul style="list-style-type: none"> <li>Conduct research on environmental protection for SMRs and other related studies on the monitoring and evaluation assessment for the environmental management plan including procedures for decommissioning.</li> </ul>  |
| Emergency Planning             | <ul style="list-style-type: none"> <li>Review, finalize, approve, and test the RADPLAN in a national exercise and undertake its continuous updating.</li> </ul>  |
| Nuclear Security               | <ul style="list-style-type: none"> <li>Develop Protocol on Management of Information.</li> <li>Execute a Memorandum of Agreement (MOA) on Nuclear Security Events.</li> </ul>  |
| Nuclear Fuel Cycle             | <ul style="list-style-type: none"> <li>Implement the legal and regulatory framework for determined domestic available nuclear materials and reliable and responsible foreign suppliers through the National Policy and Strategy for Radioactive Waste and Spent Fuel Management and the Radioactive Waste and Spent Fuel Management Act.</li> </ul>  |
| Radioactive Waste Management   | <ul style="list-style-type: none"> <li>Select processing technology (predisposal – processing and storage)</li> <li>Establish siting criteria.</li> <li>Select site evaluated with support preparatory works.</li> </ul>   |
| Industrial Involvement         | <ul style="list-style-type: none"> <li>Establish and approve the national codes and standards.</li> <li>Obtain quality assurance management including on safety and performance.</li> <li>Develop technology transfers policy.</li> <li>Localize target setting for nuclear power plants.</li> </ul>   |
| Procurement                    | <ul style="list-style-type: none"> <li>Study the best practices in procurement of other countries with nuclear power plants.</li> <li>Develop procurement rules to support the procurement requirements of nuclear power plants.</li> <li>Interface with possible vendors to discuss procurement concerns.</li> <li>Finalize the procurement procedures for nuclear power plants.</li> </ul>                                   |

**Targets for Milestone 3.** Under the Final Investment Decision, contracting and construction activities under Milestone 3 (2028-2032), the NEP-IAC through its SCs will continue to assist the regulator on accomplishing the identified actions/targets of the NEP Roadmap and Action Plan for the period. Key target under Milestone 2 will be the completion of the construction of the nuclear power plant (2032).

The completion of Milestone 3 is the start of the commercial operation of the nuclear power plant in 2032. It is envisioned that the regulator along with the NEP-IAC will continue to update the NEP Roadmap and Action Plan to respond to prevailing developments for the safe and cost-effective operation of nuclear power plants in the country.

**Long-Term NEP Targets.** In this Philippine Energy Plan (PEP), the entry of nuclear power generation capacities is targeted in 2032 with at least 1,200 MW, and additional 1,200 MW by 2035 and 2,400 MW by 2050. Embarking on the NEP is expected to drive investment in human capital, contribute to increased labor productivity, offer lower life cycle emissions when compared to other energy sources, and serve as a cost-effective mitigation option for GHG emissions within the planning period. Nuclear energy can provide the baseload power requirement of the country.





Opportunities for additional generation capacities from nuclear power plants can complement the repurposing of coal power. Advancements in nuclear power plant technologies also provide a cost competitive alternative particularly the small modular reactors (SMRs) or microreactors whose resource requirements can lead to faster deployment when compared to the conventional pressurized water reactors (PWRs). The SMRs also have reduced fuel requirements when compared to PWRs. Moreover, SMR may be a sustainable source of power supply for off-grid areas.

Figure 3. NEP Roadmap 2023-2032

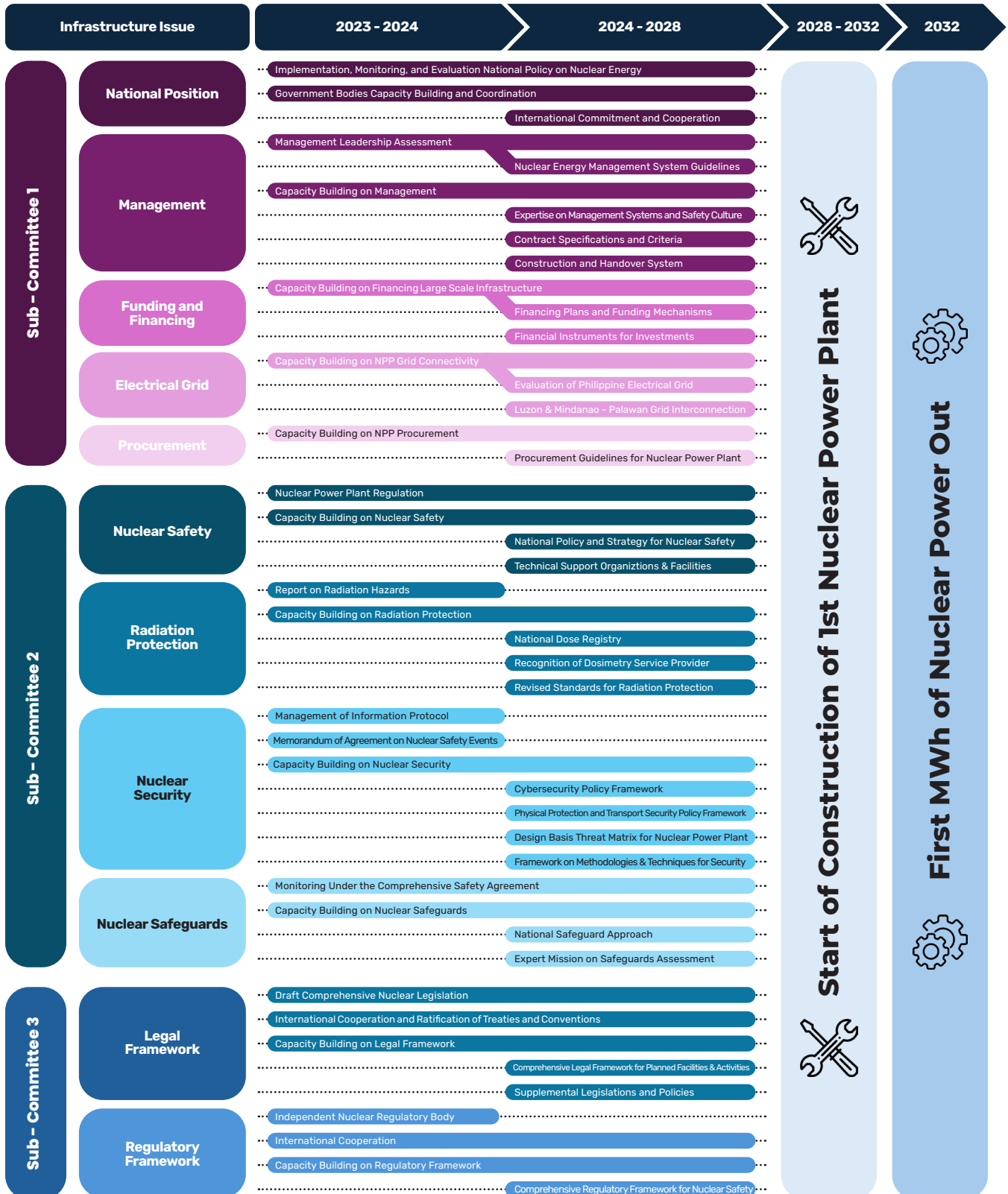
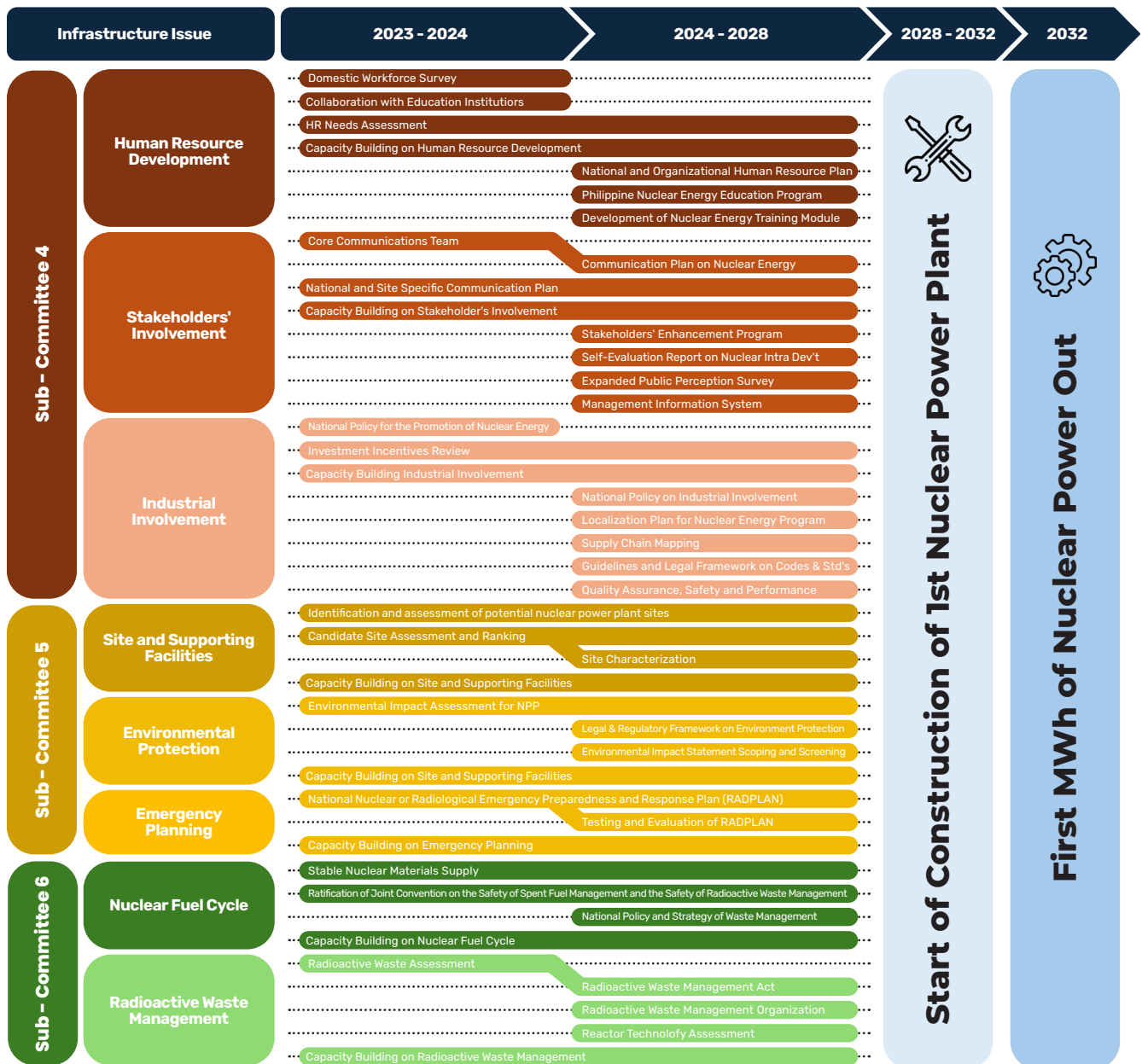


Figure 3. NEP Roadmap 2023-2032



Considered as “big ticket project”, the implementation of the NEP in the medium-term requires collaboration with the independent regulatory body that will ensure the adherence to nuclear safety, security, and safeguards culture. The NEP-IAC will continue with its various international technical cooperation programs for sustained development of the NEP. These would include engagements with the IAEA, and Japan for trainings, showcasing the best regional practices on the development of nuclear energy. The implementation of the 123 Agreement with the U.S. under the framework of the Memorandum of Understanding (MOU) on Strategic Civilian Nuclear Cooperation with the U.S. will be also undertaken.

## B. FOSTERING ENVIRONMENTAL SUSTAINABILITY

Energy serves as the backbone of the economy as it drives growth and improves social equity. The government recognizes the significant strides that must be taken to achieve the Sustainable Development Goals (SDGs), with SDG 7 – Clean and Affordable



Energy, being one of the core objectives. It is deemed as the “Golden Thread” that supports the realization of the other global goals. Thus, energy production and consumption must be more efficient and judicious that advances accessibility, availability, and affordability, while reducing its environmental consequences.

Energy policies and programs have been crafted to expand access to sustainable and clean energy for the country through a strong collaboration with all stakeholders. The DOE is aggressively pursuing the energy sector’s agenda to implement energy efficiency and conservation (EEC) practices, accelerate the deployment of renewable energy (RE), and adopt and develop new and emerging energy technologies together with sound environmental management to achieve a just energy transition.

The implementation of energy programs and projects must be coupled with efforts to improve the environmental management, monitoring and evaluation of the mitigation and adaptation measures to reduce the impacts to environment and address climate change. Various tools and methodologies are being used to measure, assess, and validate these efforts against the targets set in the environmental plans and programs and the country’s NDC including the GHG Inventory, National Grid Emission Factor (NGEF) estimation, and the enhancement of the Philippine Emissions Pathways Calculator (PEPC), among others.

## Environmental Management

Environmental management and protection is based on a set of laws and regulations that govern all energy projects from exploration to development to production and utilization. Energy projects can be categorized into four (4) types:

- A. Environmentally Critical Projects (ECPs), which pose high risks or negative environmental impacts;
- B. Projects in Environmentally Critical Areas (ECAs) located in ecologically, socially or geologically sensitive areas that significantly affect the quality of environment;
- C. Projects that are not classified as Category (A) or Category (B) that directly enhance the quality of environment or directly address existing environmental problems; and,
- D. Projects that are deemed unlikely to cause significant adverse impacts on the quality of environment.

Following the guidelines of the Philippines Environmental Impact Statement System (PEISS), a project proponent is required to undertake an Environmental Impact Assessment (EIA) and submit Environmental Impact Statement (EIS) or EIA Report, or Environmental Performance Report and Management Plan (EPRMP) to secure Environmental Compliance Certificate (ECC) for energy projects categorized as (A) and (B). The projects include power plants, refineries, transmission lines, oil production fields, and coal mines whose ECC conditions include the formation of a Multipartite Monitoring Team (MMT)<sup>1</sup>. On the other hand, the project proponent is required to prepare and submit project description to secure Certificate of Non-Coverage (CNC) for energy projects categorized as (C) and (D). The ECC and CNC are issued by the Department of Environment and Natural Resources (DENR), the country’s environmental protection regulatory body.

The EIA process<sup>2</sup> assesses the potential environmental effects of a project or development while considering related socio-economic, cultural, and human health effects, both positive and negative. The EIA process in *Figure 4*, involves:

- *Screening* determines if a project is covered or not covered by the PEISS, while *Scoping* identifies the most significant issues/impacts of a proposed project, and then, delimits the extent of baseline information to those necessary to evaluate and mitigate the impacts;
- *EIA Study* involves a description of a proposed project and its alternatives, characterization of the project environment, impact identification and prediction, evaluation of impact significance, impact mitigation, and formulation of Environmental Management and Monitoring Plan to come up with an EIA Report;
- *Review of EIA Report* normally entails a procedural screening for compliance to minimum requirements specified during Scoping, followed by a substantive review composed of third party experts;
- *Decision Making* covers evaluation of EIA recommendations and the draft decision document; and,
- *Monitoring, Validation and Evaluation/Audit* stage assesses performance of the proponent against the ECC and its commitments in the Environmental Management and Monitoring Plan to ensure actual impacts of the project are adequately prevented or mitigated.

<sup>1</sup> MMT is composed of representatives from relevant government agencies, local government units (LGUs), non-government organizations (NGOs), and peoples’ organizations (POs), the community, the women’s sector, and whenever necessary, from the academe and other sectors.

<sup>2</sup> Revised Procedural Manual for DENR Administrative Order 2003, 30 August 2007



Figure 4. EIA Process

The analyses and conclusions of the process are holistically presented in the EIA report. It outlines the baseline conditions of the environment and the population in the area, specifies the project's consequences at each phase, and evaluates the significance of those impacts. If the consequences are considerable, the EIA report includes mitigation strategies to address them, as well as a monitoring plan to keep track of the impacts as the project is being developed and implemented.

Together with other stakeholders, the DOE monitors environmental compliance of energy projects to make sure that social and environmental requirements are met and appropriate mitigation actions to address environmental impacts are in place. As a mechanism for monitoring compliance, the MMT is established as one of the ECC conditions for ECPs and projects located in ECAs. The MMT ensures public participation from project construction to decommissioning.

To ascertain whether the project exhibits adverse impact on environment and the host community, a quarterly monitoring of the metrics for various modules outlined in the Environmental Management Plan (EMP), Environmental Monitoring Program (EMoP), and Social Development Plan (SDP) are conducted. Accordingly, this is verified through the preparation of the semestral Compliance Monitoring and Validation Report (CMVR) of the MMT. Members of the MMT certify the CMVR, which also offers suggestions for enhancing the project's environmental performance.

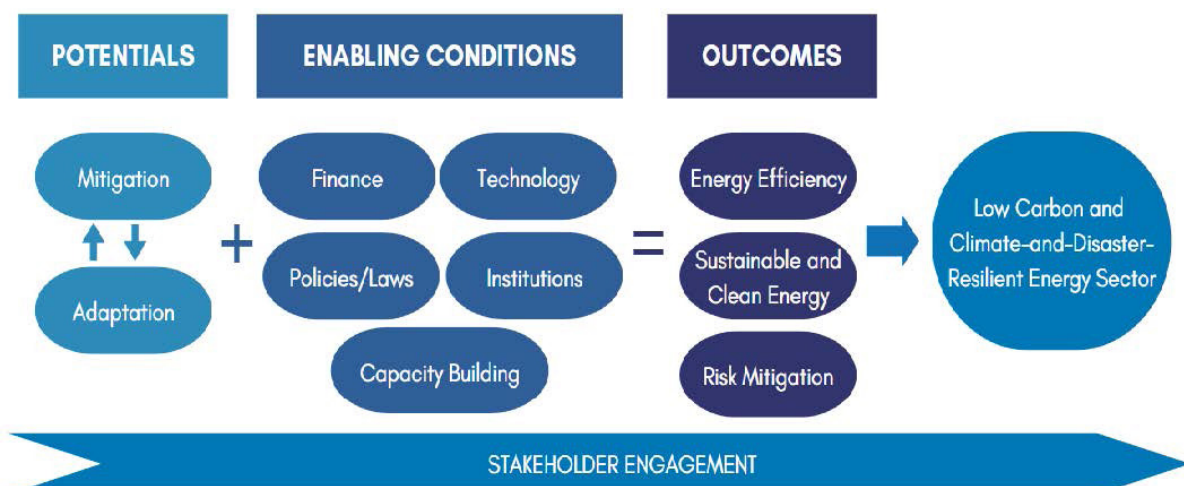
Additionally, the MMT shares knowledge and experiences through the regular delivery of Information, Education, and Communication (IEC) activities to all relevant stakeholders. The MMT develops its Annual Work and Financial Plan (AWFP), which covers air and water quality, biophysical, and socioeconomic monitoring. This plan provides the operational framework for its environmental compliance monitoring and verification efforts.



## Climate Change Mitigation and Adaptation

Climate change directly impacts both the demand- and supply-side aspects of the energy sector. There are many ways to attain a low carbon and climate- and disaster-resilient (LCCDR) energy sector. However, the path that it takes depends on various factors, including the degree of development, aspirational goals, socio-economic context, and political will. *Figure 5* shows the relationship between the processes that underlie the adaptation and mitigation measures to achieve the vision of a clean and sustainable energy sector. This framework is intended to identify the policies, regulations, and institutions, which the energy sector should adopt in response to the conditions necessary for transitioning towards LCCDR. Finance, technology, capacity building, laws and policies, and institutions and stakeholder engagement are enabling factors to achieve the goals of GHG emissions reduction and climate and disaster resilience.

Figure 5. Low Carbon and Climate-and-Disaster-Resilient (LCCDR) Energy Sector Framework



## Energy Sector Nationally Determined Contributions (NDC)

The Philippines recognizes that climate change mitigation is critical to limit the impacts on human societies and ecosystems. To decrease contribution to climate change in terms of GHG emissions and reduction of other pollutants, which are considered precursor gases, the energy sector has the following climate change mitigation policies and measures (PAMs):

- Implementation of EEC measures/initiatives across all sectors;
- Acceleration of the development, deployment, and use of RE sources and technologies;
- Utilization of highly efficient and low emission (HELE) coal technologies;
- Installation of new and emerging technologies;
- Penetration of electric vehicles (EVs) to reduce petroleum product use in the transport sector;
- Utilization of natural gas not only in the power sector but also in the industry and commercial sectors; and
- Grid modernization program/smart grid systems.

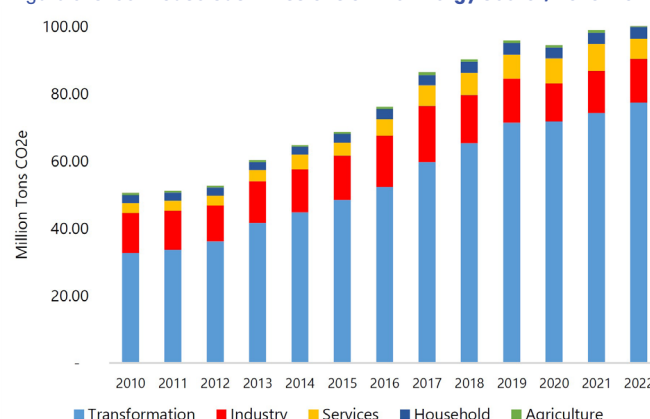
The NDC is the heart of the Paris Agreement (PA) of the United Nations Framework Convention on Climate Change (UNFCCC). It is the global climate change regime that was agreed at the 21<sup>st</sup> Conference of Parties (COP21) held on 12 December 2015. The NDC embodies efforts by each Party to reduce national emissions and adapt to the impacts of climate change. It guides the long-term development plan towards a climate-resilient and low-carbon future of a country. Through the NDC, each country communicates the actions that it is willing to take to help achieve the PA goal of holding global average temperature increase to well below two (2) degrees Celsius of pre-industrial levels and pursuing efforts to limit it to one point five (1.5) degrees Celsius. Likewise, it should promote the country's economic development and industrialization goals, while contributing to the global efforts to stabilize the earth's climate.

The Philippines submitted its first NDC<sup>3</sup> to the UNFCCC on 15 April 2021 and commits to an economywide aggregate emission reduction of 75.0 percent from the Business-as-Usual (BAU) scenario for the period 2020 to 2030. The BAU scenario is projected based on the 2010 National Greenhouse Gas Inventory. The commitment is composed of 2.7 percent unconditional reduction using nationally mobilized resources and 72.3 percent conditional reduction requiring the Means of Implementation (MOI) and support to be provided by developed or Annex II<sup>4</sup> Parties.

The energy sector's contribution to the country's NDC is based on the PEP 2018-2040 projections, strategies, and targets. The sector maintains a two-pronged complementary approach of its NDC that highlights adaptation actions with mitigation co-benefits in the transformation (power and energy industry), industry, and other sectors. The GHG emissions of the energy sector, particularly from fuel combustion, remain the major contributor to the country's emissions. Likewise, various energy facilities and infrastructures are affected by the impacts of climate change.

Figure 6 shows the energy sector's GHG emission from 2010 to 2022, which reflects an increase of 82.8 percent for the period, equivalent to an annual average growth of 6.0 percent, from 50.62 million ton of carbon dioxide equivalent (Mtco<sub>2</sub>e) to 100.3 Mtco<sub>2</sub>e, respectively. The transformation sector (electricity generation) increased its emission by 136.6 percent, followed by the services, household, and industry sectors at 111.2 percent, 39.0 percent, and 9.0 percent, respectively. The agriculture sector exhibited a decrease of 35.7 percent for the same period.

Figure 6. Greenhouse Gas Emissions of the Energy Sector, 2010-2022



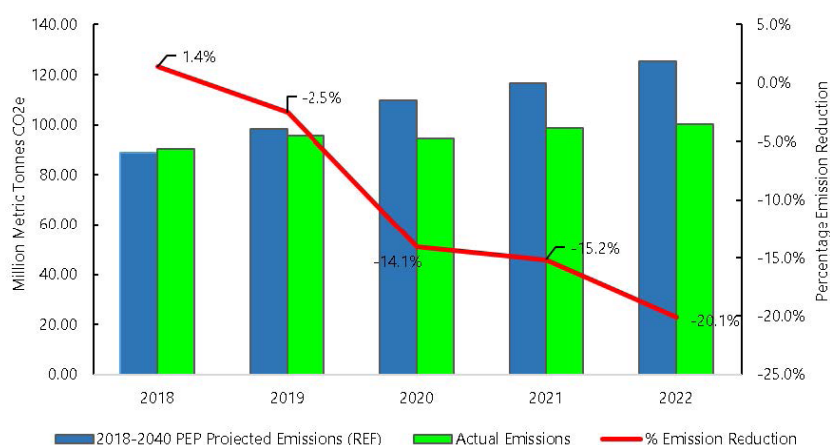
The DOE also accounts the GHG emissions of the transport sector, but not reflected (in Figure 6) since its emission is treated separately from energy in the country's NDC. The Department of Transportation (DOTr) is tasked to implement, monitor, and assess the NDC policies and measures of the transport sector.

<sup>3</sup> Prior to the PA, the country submitted an Intended Nationally Determined Contribution (INDC) to the UNFCCC in October 2015 with an ambitious 70.0 percent emissions reduction by 2030.  
<sup>4</sup> Annex II Parties include the 24 industrialized countries namely Australia, Austria, Belgium, Canada, Denmark, European Economic Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom of Great Britain and Northern Ireland and United States of America.

Figure 7 shows that generally the rate of decrease of the actual emissions have declined from 2018-2022. In addition, the difference of the percentage emission reduction using the actual data versus that of the NDC BAU increased from the same period.

The reduction is more apparent from 2018-2020 due to increasing share of RE in the power generation mix enabled by effective policy interventions. While from 2020-2022, slow percentage reduction can be attributed to the COVID-19 pandemic that resulted in economic slowdown, which greatly affected the activities of the other end-use and industry sectors (Table 3).

Figure 7. Greenhouse Gas Emission Reduction, 2018-2022



The Energy Supply and Demand Outlook of this Plan is used to assess the NDC based on the additional PAMs of the energy sector excluding those that are associated with the transport sector. The targets and timelines in the National Climate Change Action Plan (NCCAP), National Adaptation Plan (NAP), and the NDC are harmonized with the PEP. It aggressively pursues enhanced initiatives on EEC, RE, and alternative fuels development and utilization, entry of new and emerging clean technologies, implementation of energy resiliency standards, and even the adoption of information and communication (IT) technology from the transformation sector to end users.

Table 3. Greenhouse Gas Emission Reduction by Sector in Mtco2e

| Sector             | 2018-2040 NDC Projections |               |               | Actual        |               |               | Emission Reduction (Mtco2e   %) |               |              |               |              |               |
|--------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------------------------|---------------|--------------|---------------|--------------|---------------|
|                    | 2020                      | 2021          | 2022          | 2020          | 2021          | 2022          | 2020                            |               | 2021         |               | 2022         |               |
| Transformation     | 81.39                     | 86.71         | 94.10         | 71.75         | 74.29         | 77.44         | 9.64                            | 11.85%        | 12.42        | 14.33%        | 16.66        | 17.70%        |
| Industry           | 15.99                     | 16.82         | 17.69         | 11.34         | 12.50         | 12.94         | 4.65                            | 29.09%        | 4.32         | 25.67%        | 4.75         | 26.84%        |
| Other Sectors      | 12.51                     | 13.08         | 13.69         | 11.35         | 12.13         | 9.88          | 1.16                            | 9.27%         | 0.95         | 7.30%         | 3.81         | 27.86%        |
| <b>Total</b>       | <b>109.89</b>             | <b>116.61</b> | <b>125.48</b> | <b>94.44</b>  | <b>98.92</b>  | <b>100.26</b> | <b>15.45</b>                    | <b>14.06%</b> | <b>17.69</b> | <b>15.17%</b> | <b>25.22</b> | <b>20.10%</b> |
| Transport          | 41.25                     | 43.37         | 45.60         | 28.15         | 31.53         | 35.42         | 13.10                           | 31.77%        | 11.84        | 27.29%        | 10.18        | 22.33%        |
| <b>Grand Total</b> | <b>151.14</b>             | <b>159.98</b> | <b>171.08</b> | <b>122.58</b> | <b>130.45</b> | <b>135.68</b> | <b>28.56</b>                    | <b>18.89%</b> | <b>29.53</b> | <b>18.46%</b> | <b>35.40</b> | <b>20.69%</b> |

As shown in Figure 8, the enhanced PAMs of the energy sector alone, as monitored over the last three (3) years, have positively responded to the submitted 2020-2030 NDC commitments to the UNFCCC given its aggregate target of 45.9 Mtco<sub>2</sub>e, which includes both conditional and unconditional targets. From 2020 to 2022, a total of 52.9 Mtco<sub>2</sub>e of GHG emissions was reduced by the energy sector, about 15.0 percent higher than the total NDC reduction target.

Given the current plans and programs of the energy sector until 2030, it is projected that the level of GHG emission reduces by about 28.3 percent to 35.0 percent from the NDC BAU target depending on the Scenarios of this PEP. This equates to more than a ten-fold increase from the 45.9 Mtco<sub>2</sub>-e GHG emission reduction target.

The energy sector also monitors avoided emissions with the amount of electricity generated by the country's RE sources. This is computed using the equivalent fuel requirement to generate the same amount of electricity, which is then multiplied with coal emission factors for carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). The CH<sub>4</sub> and N<sub>2</sub>O emissions are then multiplied with their corresponding global warming potentials to come up with the CO<sub>2</sub> equivalent, which is then added to the CO<sub>2</sub> emission. Table 4 presents the actual and projected GHG avoidance of the RE generation based on the above computation.



Figure 8. Energy Sector NDC Assessment vs 2023-2050 PEP Projected GHG Emissions

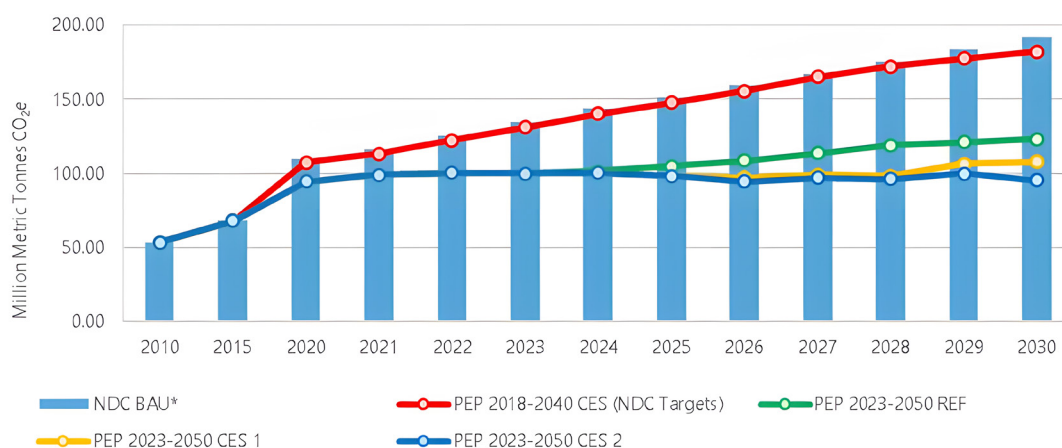


Table 4. Energy Sector NDC Assessment of GHG Emissions vis-à-vis' NDC projected Emissions (MtcO<sub>2</sub>-e)

|    |  | Actual* |        |        | Projected |        |        |        |        |        |        |        | Total       |
|----|--|---------|--------|--------|-----------|--------|--------|--------|--------|--------|--------|--------|-------------|
|    |  | 2020    | 2021   | 2022   | 2023      | 2024   | 2025   | 2026   | 2027   | 2028   | 2029   | 2030   | 2020 - 2030 |
| A. | NDC BAU Projected                                    | 109.89  | 116.60 | 125.48 | 134.39    | 143.41 | 151.50 | 159.37 | 167.36 | 175.46 | 183.79 | 192.26 | 1,659.52    |
| B. | 2023-2050 PEP Scenarios                              |         |        |        |           |        |        |        |        |        |        |        |             |
|    | REF  | 99.86   | 98.97  | 100.26 | 99.79     | 101.51 | 104.80 | 108.62 | 113.61 | 118.91 | 121.06 | 123.26 | 1,190.66    |
|    | CES1   | 99.86   | 98.97  | 100.26 | 99.63     | 100.12 | 97.95  | 96.88  | 99.16  | 98.10  | 106.56 | 107.77 | 1,105.26    |
|    | CES2   | 99.86   | 98.97  | 100.26 | 99.63     | 100.12 | 98.19  | 94.48  | 96.84  | 96.04  | 99.72  | 95.27  | 1,079.41    |
| C. | NDC Assessment (Reduction from BAU)                  |         |        |        |           |        |        |        |        |        |        |        |             |
|    | REF  | 10.03   | 17.63  | 25.22  | 34.61     | 41.90  | 46.70  | 50.75  | 53.75  | 56.55  | 62.73  | 69.00  | 468.86      |
|    | CES1   | 10.03   | 17.63  | 25.22  | 34.76     | 43.29  | 53.55  | 62.50  | 68.20  | 77.36  | 77.23  | 84.49  | 554.26      |
|    | CES2   | 10.03   | 17.63  | 25.22  | 34.76     | 43.29  | 53.30  | 64.89  | 70.52  | 79.42  | 84.07  | 96.98  | 580.12      |
| D. | RPS Contribution to Unconditional / RE GHG Avoidance |         |        |        |           |        |        |        |        |        |        |        |             |
|    | REF  | 47.46   | 47.30  | 49.46  | 56.00     | 54.98  | 57.60  | 58.70  | 64.15  | 67.91  | 70.03  | 74.31  | 647.90      |
|    | CES1   | 47.46   | 47.30  | 49.46  | 56.06     | 59.43  | 62.62  | 68.64  | 71.44  | 77.90  | 79.08  | 84.41  | 703.79      |
|    | CES2   | 47.46   | 47.30  | 49.46  | 56.06     | 59.43  | 63.17  | 70.02  | 72.86  | 79.23  | 82.02  | 89.03  | 716.05      |
| E. | Total GHG Reduction and Avoidance                    |         |        |        |           |        |        |        |        |        |        |        |             |
|    | REF  | 57.49   | 64.93  | 74.68  | 90.61     | 96.88  | 104.30 | 109.46 | 117.90 | 124.46 | 132.76 | 143.31 | 1,116.76    |
|    | CES1   | 57.49   | 64.93  | 74.68  | 90.82     | 102.72 | 116.17 | 131.14 | 139.64 | 155.25 | 156.31 | 168.90 | 1,258.05    |
|    | CES2   | 57.49   | 64.93  | 74.68  | 90.82     | 102.72 | 116.48 | 134.91 | 143.38 | 158.65 | 166.10 | 186.01 | 1,296.16    |
| F. | NDC BAU less Total GHG Reduction and Avoidance       |         |        |        |           |        |        |        |        |        |        |        |             |
|    | REF  | 52.40   | 51.67  | 50.80  | 43.79     | 46.54  | 47.20  | 49.92  | 49.46  | 51.00  | 51.03  | 48.95  | 542.76      |
|    | CES1   | 52.40   | 51.67  | 50.80  | 43.57     | 40.69  | 35.33  | 28.24  | 27.72  | 20.21  | 27.48  | 23.36  | 401.47      |
|    | CES2   | 52.40   | 51.67  | 50.80  | 43.57     | 40.69  | 35.02  | 24.46  | 23.99  | 16.81  | 17.69  | 6.24   | 363.36      |

\*Actual data except for the NDC BAU projections

<sup>2</sup>TFEC is the total energy consumed by the end-users – households, industry, transport, services, and agriculture – such as electricity and petroleum products (i.e. gasoline, diesel, kerosene, etc.). These are energy products and fuels that are converted from the primary energy form, i.e., fuels and energy source (RE) to electricity, crude oil to petroleum products, which incur losses during the conversion process due to their thermal efficiencies. These losses make the difference between TPES and TFEC. For further details, see pp. 23-25 for the process flow of energy forms.

If the GHG avoidance is then combined with the GHG reduction, the energy sector's contribution to achieve the NDC target is amplified by equivalent avoidance from RE generation, which totals 143.3 Mtco<sub>2</sub>e for the same period. The said figure reaches more than three times or around 312.0 percent of the sector's NDC target. Combining the GHG emission reduction with that of avoidance, energy has contributed an aggregate of 197.1 Mtco<sub>2</sub>e in the last 3 years. This is also equivalent to about 65.9 percent of the sector's GHG emissions.

The DOE emphasizes that the energy sector commitment should be based on sound technical assessment or evidence. The energy sector's GHG emission commitment includes both conditional and unconditional targets. The latter equates to the implementation of the government's energy efficiency measures.

Table 5 shows the projected GHG emissions and corresponding reduction in the Clean Energy Scenario 1 (CES 1) and CES 2 from the Reference (REF) Scenario over the planning horizon.

In the REF Scenario, the total sectoral GHG emissions from the transformation, industry, transport, and other sectors covering services, household, and agriculture for the period 2023–2050 reaches 5,555.4 Mtco<sub>2</sub>e, of which energy accounts for 71.8 percent. In the CES 1, the total GHG emission stands at 4,564.4 Mtco<sub>2</sub>e, a 21.7 percent decrease equivalent to 991.0 Mtco<sub>2</sub>e reduction from the REF Scenario. An additional reduction of 8.0 percent is achieved by furthering efforts in the CES 2 resulting in a total of 29.7 percent reduction or 1,273.3 Mtco<sub>2</sub>e decrease from the REF Scenario.

On the other hand, the GHG emissions of the energy sector without the transport sector in the CES 1 decreased by 759.1 Mtco<sub>2</sub>e as compared to the REF. This corresponds to a 19.0 percent decrease, which drops further by 7.1 percent in the CES 2 (from the REF), equivalent to 1,041.1 Mtco<sub>2</sub>e. The energy sector GHG emissions in the REF, CES 1, and CES 2 are estimated at 3,989.7 Mtco<sub>2</sub>e, 3,230.6 Mtco<sub>2</sub>e, and 2,948.5 Mtco<sub>2</sub>e, respectively.

**Table 5. Projected Greenhouse Gas Emissions by Sector in Mtco2e**

|  | 2020               | 2021   | 2022   | 2023                           | 2024   | 2025   | 2030   | Total 2023 - 2030 | 2040   | 2050   | Total 2023 - 2050 |
|--|--------------------|--------|--------|--------------------------------|--------|--------|--------|-------------------|--------|--------|-------------------|
|  | <b>Actual Data</b> |        |        | <b>Reference Scenario</b>      |        |        |        |                   |        |        |                   |
| Transformation   | 71.75              | 74.29  | 77.44  | 75.71                          | 76.22  | 78.16  | 89.90  | 662.23            | 96.77  | 122.16 | 2,699.18          |
| Industry   | 11.34              | 12.50  | 12.94  | 12.84                          | 13.66  | 14.55  | 18.67  | 126.31            | 28.35  | 38.45  | 701.80            |
| Other Sectors  | 11.35              | 12.13  | 9.88   | 11.23                          | 11.64  | 12.09  | 14.70  | 103.05            | 23.00  | 36.38  | 588.68            |
| <b>Total</b>   | 94.44              | 98.92  | 100.26 | 99.79                          | 101.52 | 104.80 | 123.26 | 891.59            | 148.12 | 196.98 | 3,989.66          |
| Transport  | 28.15              | 31.53  | 35.42  | 36.97                          | 38.16  | 39.57  | 47.15  | 335.73            | 61.64  | 73.11  | 1,565.78          |
| <b>Grand Total</b>                                       | 122.58             | 130.45 | 135.68 | 136.76                         | 139.68 | 144.38 | 170.41 | 1,227.32          | 209.75 | 270.09 | 5,555.44          |
|  | <b>Actual Data</b> |        |        | <b>Clean Energy Scenario 1</b> |        |        |        |                   |        |        |                   |
| Transformation   | 71.75              | 74.29  | 77.44  | 75.71                          | 75.24  | 72.03  | 76.32  | 585.30            | 73.60  | 73.55  | 2,053.61          |
| Industry   | 11.34              | 12.50  | 12.94  | 12.75                          | 13.42  | 14.16  | 17.52  | 121.36            | 25.02  | 34.02  | 635.10            |
| Other Sectors  | 11.35              | 12.13  | 9.88   | 11.17                          | 11.46  | 11.80  | 13.93  | 99.57             | 20.77  | 32.93  | 541.88            |
| <b>Total</b>   | 94.44              | 98.92  | 100.26 | 99.64                          | 100.12 | 97.99  | 107.77 | 806.23            | 119.38 | 140.50 | 3,230.58          |
| Transport  | 28.15              | 31.53  | 35.42  | 36.62                          | 37.20  | 37.88  | 41.83  | 313.16            | 50.59  | 59.11  | 1,333.82          |
| <b>Grand Total</b>                                       | 122.58             | 130.45 | 135.68 | 136.26                         | 137.32 | 135.87 | 149.60 | 1,119.40          | 169.97 | 199.61 | 4,564.40          |
| <b>GHG Reduction: REF to CES 1 (excluding Transport)</b> | 2.69               | 3.42   | 3.39   | 0.15                           | 1.39   | 6.81   | 15.49  | 85.36             | 28.73  | 56.49  | 759.08            |
|  | <b>Actual Data</b> |        |        | <b>Clean Energy Scenario 2</b> |        |        |        |                   |        |        |                   |
| Transformation   | 71.75              | 74.29  | 77.44  | 75.71                          | 75.24  | 72.28  | 63.83  | 559.44            | 65.32  | 59.98  | 1,771.55          |
| Industry   | 11.34              | 12.50  | 12.94  | 12.75                          | 13.42  | 14.16  | 17.52  | 121.36            | 25.02  | 34.02  | 635.10            |
| Other Sectors  | 11.35              | 12.13  | 9.88   | 11.17                          | 11.46  | 11.80  | 13.93  | 99.57             | 20.77  | 32.93  | 541.88            |
| <b>Total</b>   | 94.44              | 98.92  | 100.26 | 99.64                          | 100.12 | 98.24  | 95.28  | 780.38            | 111.11 | 126.94 | 2,948.53          |
| Transport  | 28.15              | 31.53  | 35.42  | 36.62                          | 37.20  | 37.63  | 41.83  | 312.91            | 50.59  | 59.11  | 1,333.57          |
| <b>Total</b>   | 122.58             | 130.45 | 135.68 | 136.26                         | 137.32 | 135.87 | 137.10 | 1,093.29          | 161.69 | 186.05 | 4,282.10          |
| <b>GHG Reduction: REF to CES 2 (excluding Transport)</b> | 2.69               | 3.42   | 3.39   | 0.15                           | 1.39   | 6.56   | 27.99  | 111.21            | 37.01  | 70.05  | 1,041.13          |

Figure 9 reflects the projected emissions of the three scenarios of this Plan against the PEP 2018-2040 NDC BAU, which was extended until 2050 using its average annual growth rate of 6.0 percent, thereby bringing the total emissions to more than 8,700 Mtco<sub>2</sub>e for the period 2020-2050. The projected GHG emission and the cumulative emission reduction of the energy sector's initiatives incorporated in the current scenarios are sending the signal that the country is doing its part to mitigate its climate change impacts even without a net-zero commitment. The graph provides an insight that the projected 2050 REF, CES 1, and CES 2 emissions are almost equivalent to the 2030, 2024, and 2022 projected emissions of the NDC BAU, respectively. The energy sector will be reducing its total emissions by 55.0 percent to more than 66.0 percent, equivalent to around 4,800 to 5,800 Mtco<sub>2</sub>e, over the planning period depending on the scenario as compared to the said BAU. The measures set out in this Plan are discussed in detail in the Energy Supply and Demand Outlook Chapter and sectoral chapters.

Accounting for both GHG emission reduction and avoidance enables the energy sector to contribute to both climate change mitigation and adaptation. To expound, GHG reduction is computed based on the reduced fossil fuel utilization or the displacement of a fossil fuel used with another less emitting fossil fuel in the transformation, industry, and other sectors.

On the other hand, GHG avoidance is computed using the equivalent fuel consumption of the RE generation multiplied by the coal emission factors to come up with the amount of avoided emissions. This methodology can still be enhanced by identifying which of the RE generations are for baseload, mid-range, and peaking requirements and applying the most appropriate emission factors, like for natural gas or diesel. For the impact of energy efficiency, the relevant grid emission factor, which is also discussed later in this chapter, can be used.

**Figure 9. Projected GHG Emissions and Cumulative GHG Emission Reduction, 2023-2050**

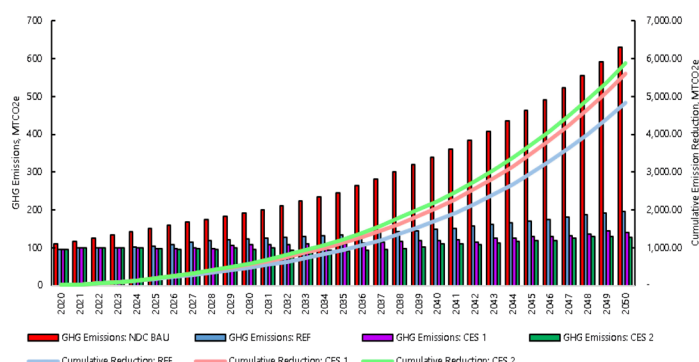
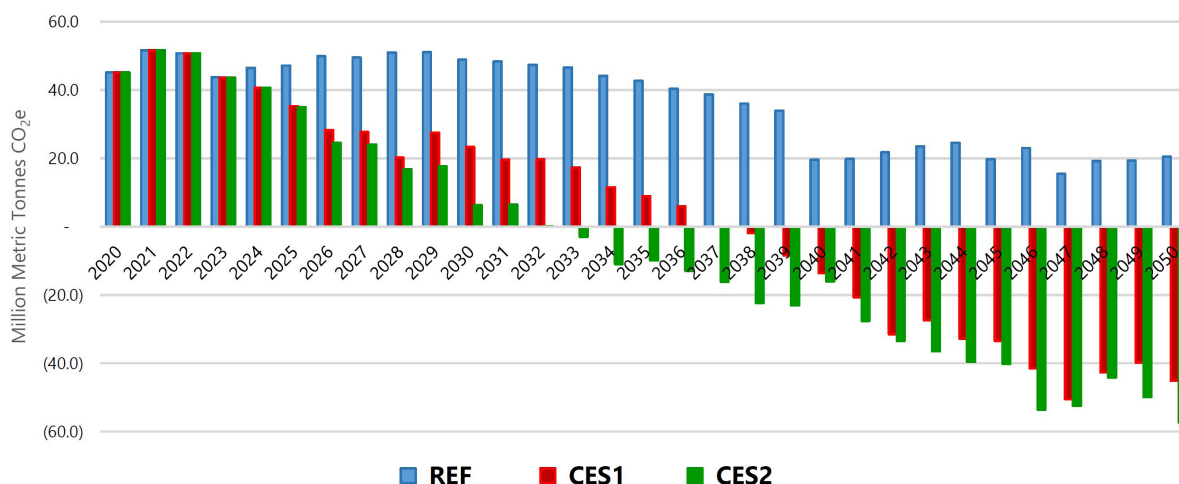


Figure 10 shows the effect to the NDC BAU emissions of the combined GHG emissions reduced and avoided over the planning horizon. The sum when deducted from the NDC figures reflects that the energy sector can offset its own emissions by as early as 2033 and 2037, based on the CES 2 and CES 1, respectively. However, the REF will not be able to achieve the same result but will still cut the energy emissions by more than half.

**Figure 10. Contribution of GHG Reduction and Avoidance per Scenario to Attain the NDC Targets**



The submitted NDC of the energy sector, particularly for the conditional target emphasized that it should not result in increased energy costs and prices to be borne by the consumers. To reduce the attendant costs for implementation, it is therefore important that sustainable financing mechanisms are crafted and enabled.



It is also imperative that the energy sector stakeholders maximize and capitalize all resources available to attain the NDC targets. The realization of the CES 1 and CES 2 that will support the country's NDC initiatives, necessitates the infusion of USD238.70 billion investments, which covers the build cost for additional RE capacities, battery energy storage systems, natural gas, and nuclear energy. This amount of investment is necessary to aid the country in transforming and transitioning the energy system into a clean and sustainable one.

Accordingly, incremental costs of the required capacity-building and technology applications in relation to the NDC efforts should be provided through capital (new and additional) emanating from developed countries that utilize public and private investments. This is central to the DOE's call for climate justice as it pertains to the commitments that developed countries must undertake in reference to Article 4 of the PA.

For its part, the DOE intends to achieve accessible, affordable, reliable, resilient, clean, and sustainable energy products and services through its NDC. In addition, the policies and programs to be implemented should not result in additional burden to energy consumers.

## **Adaptation and Disaster Risk Reduction**

Pursuant to the National Framework Strategy on Climate Change (NFSCC), climate change adaptation is the anchor strategy, and mitigation will be pursued as a function of adaptation. The Philippines will use the NDC as an expanded platform for enhanced global cooperation and increased access to key resources (i.e., finance and technology transfer), not just for climate change mitigation, but for adaptation and resiliency measures, especially for the most vulnerable sectors.

The energy sector recognizes adaptation and disaster risk reduction as key components of the longterm response to climate change and other natural calamities and requires all energy industries to enhance their adaptive capacity, strengthen resilience, and reduce vulnerability.

To adapt to the impacts of natural and human-induced disasters, it is necessary to have strategies for climate change adaptation, as well as risk reduction. The involvement of all stakeholders in developing these strategies is critical as climate and natural disasters affect everyone in many aspects, i.e., economic, safety and health, etc. It is important to note that the climate agenda and energy resiliency go together in terms of addressing relevant concerns. The energy sector contributes significantly to GHG emissions, while in times of natural disasters, including the climate change impacts, it is crucial to have an energyresilient system to facilitate quick response, recovery, and rehabilitation from the effects of these disasters. The Energy Resiliency Roadmap, which includes the formulation of Energy Resiliency Standards complements the programs, strategies, and activities on climate change adaptation and disaster risk reduction.

A more comprehensive discussion on the resiliency and security of energy systems is provided in the Resiliency and Security of Energy Infrastructure Chapter of this Plan. This chapter particularly focuses on the measures to help prevent, prepare for, respond to, and recover and rehabilitate from natural disasters, and human-induced events, among others.

## **Emissions Monitoring, Reporting and Verification**

Development of the National Greenhouse Gas Inventory Management and Reporting System. As stipulated under Executive Order (EO) 174,5 the DOE leads the GHG inventory of the energy sector and is tasked to conduct, document, archive, and monitor the GHG emissions inventory from the combustion of fossil fuels in stationary sources, mobile sources, and fugitive emissions. The GHG emissions inventory serves as a tool for the government to determine areas where emissions can be reduced and identify measures to be implemented to reduce such, which also aids in realizing the NDC targets.

<sup>5</sup> "Institutionalizing the Philippine Greenhouse Gas Inventory Management and Reporting System" issued in November 2014.

The energy sector GHG inventory follows the internationally agreed good practice guidance and methodologies, contained in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National GHG Inventories Volume 1 on General Guidance and Reporting, and Volume 2 on Energy. Emissions estimates are computed using the 2006 IPCC Inventory Software. Default emission factors from the 2006 IPCC Volume 2 are used to estimate the emissions.

The DOE GHG Inventory Team calculates the Philippine energy sector's GHG emissions using the overall national inventory of fuel supply or the Energy Balance Table (EBT). Building from the 2010 GHG inventory, the 2015 and 2020 GHG Inventories also examined and incorporated actual consumption data of additional subsectors to enhance the GHG emissions accounting and categorization.

The DOE already submitted to the Climate Change Commission (CCC) as part of the NDC the 2015 and 2020 Energy Sector GHG Emission Inventories and Reports. The current initiative is applying the findings of the quality assurance conducted by the experts from the UNFCCC. The Energy Sector 2020 GHG Inventory Report will be incorporated in the validation of the NDC targets assessment, the preparation of the Third National Communication (TNC) and the Biennial Update Report and/or Biennial Transparency Report as required by the UNFCCC and the PA.

**Energy Sector's Greenhouse Gas Inventory.** The GHG inventory covers the emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from the various source categories of the energy sector.

Following the 2006 IPCC Guidelines, the total GHG emission of the energy sector is calculated using two approaches, i.e., Reference Approach and Sectoral Approach. The Reference Approach adopted a topdown approach where emissions are estimated using aggregate data of the country's primary energy supply, while the Sectoral Approach used a bottom-up approach where estimation is calculated using final energy consumption data, energy transformation, and fugitive-related data.

Figures 11 and 12 show the 2015 and 2020 CO<sub>2</sub> emissions by fuel type using the Reference Approach. The total CO<sub>2</sub> emissions from the energy sector accounted for 123,144.96 gigagrams (Gg) of the total CO<sub>2</sub> emissions, 56.2 percent or 69,264.13 Gg CO<sub>2</sub> came from solid fuels, followed by 37.5 percent or 46,154.64 Gg CO<sub>2</sub> came from liquid fuels, and 6.3 percent or 7,726.20 Gg CO<sub>2</sub> came from gaseous fuels. Results of the Reference Approach showed the energy sector, including transport, emitted a total of 123,144.96 Gg CO<sub>2</sub> in 2020. This reflects a 20.3 percent increase in CO<sub>2</sub> emitted from fuel combustion from 2015 to 2020.

Figure 10. Contribution of GHG Reduction and Avoidance per Scenario to Attain the NDC Targets

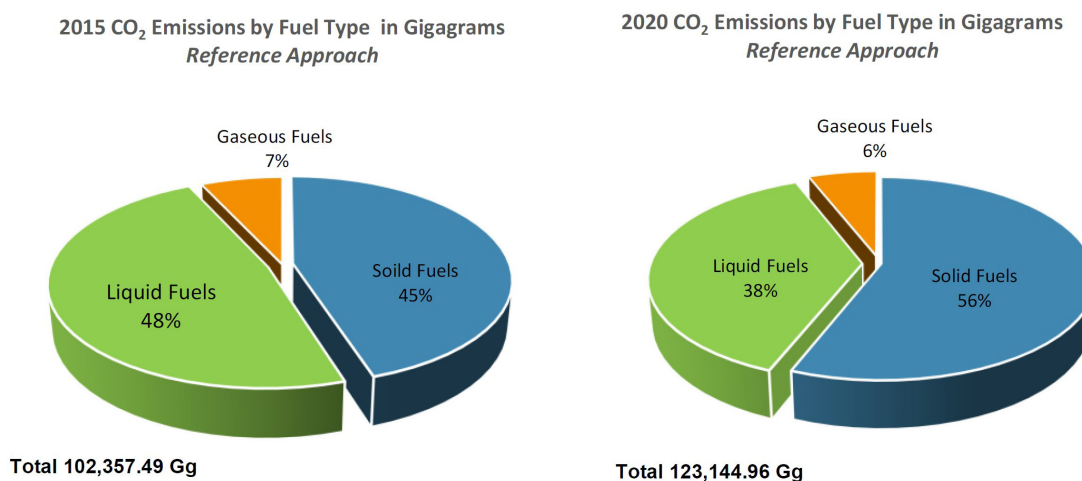


Figure 13, solid and gaseous fuels contributed the most to the increase in emissions from 1994 to 2020 which increased around 15 times during the 26-year period. Emissions from gaseous fuels increased with the use of natural gas for power generation, while emissions from solid fuels went up to about 14 times for the same period. Overall, emissions from all fuels increased by around 146.3 percent from 49,999.49 Gg CO<sub>2</sub> to 123,144.96 Gg CO<sub>2</sub>.

As similarly exhibited in the Reference Approach, GHG emissions from 1994 to 2020 in the Sectoral Approach also increased by around 150.0 percent from 50,038 Gg CO<sub>2</sub>e to 129,285.59 Gg CO<sub>2</sub>e with CO<sub>2</sub> increasing the most at 163.6 percent. The CH<sub>4</sub> and N<sub>2</sub>O also increased significantly during the same period by 73.2 percent and 106.0 percent, respectively. Figure 14 shows the historical energy sector GHG emissions by sector.

Figure 13. Historical Energy Sector Greenhouse Gas Emissions, by Gas

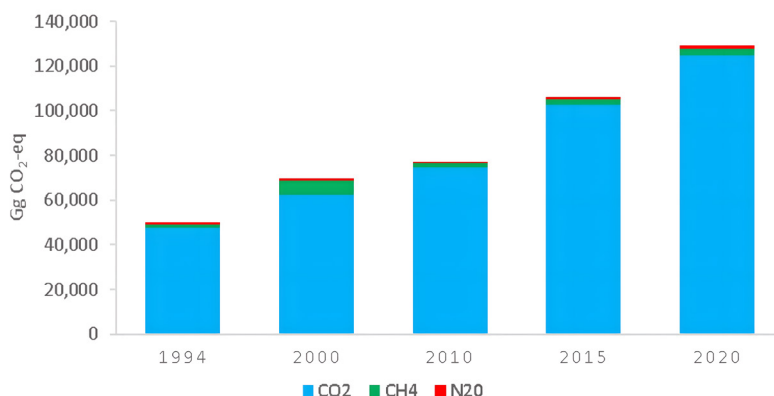
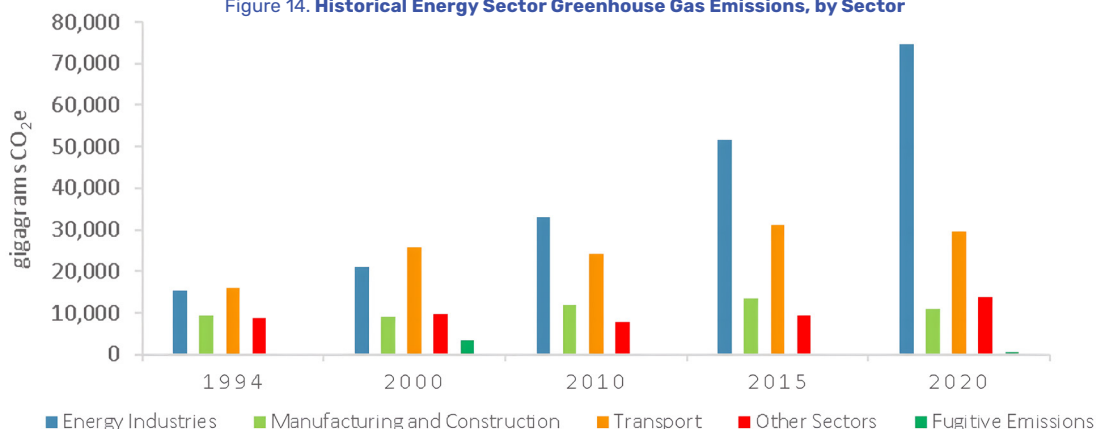


Figure 14. Historical Energy Sector Greenhouse Gas Emissions, by Sector



Results of the Sectoral Approach showed the energy sector emitted a total of 129,285.59 Gg CO<sub>2</sub>e in 2020, showing a 21.8 percent increase from the total GHG emissions in 2015. CO<sub>2</sub> continued to be the dominant GHG emitted by the sector, contributing more than 97.0 percent to the total GHG emissions in Table 6. The CH<sub>4</sub> and N<sub>2</sub>O emissions in 2020 reached a total of 4,523 Gg CO<sub>2</sub>e.

Table 6. Historical Energy Sector GHG Emissions (Gg CO<sub>2</sub>-e)

| Gas/Source   | 1994(a)       | 2000(b)       | 2010(c)       | 2015(d)        | 2020(e)        |
|--|---------------|---------------|---------------|----------------|----------------|
| <b>Carbon Dioxide (CO<sub>2</sub>)</b>               |               |               |               |                |                |
| Energy Industries                                    | 15,458        | 21,127        | 32,803        | 51,415         | 74,183         |
| Manufacturing and Construction                       | 8,980         | 9,015         | 11,887        | 13,233         | 10,275         |
| Transport  | 15,801        | 25,792        | 23,725        | 30,722         | 28,896         |
| Other Sectors  | 7,097         | 6,564         | 5,995         | 7,085          | 11,398         |
| Fugitive Emissions                                   | -             | -             | 14            | 41             | 10             |
| Sub-total (Energy Sector)                            | <b>47,335</b> | <b>62,499</b> | <b>74,425</b> | <b>102,496</b> | <b>124,763</b> |
| Sub-total (Energy Sector excluding Transport Sector) | <b>31,534</b> | <b>36,707</b> | <b>50,700</b> | <b>71,774</b>  | <b>95,867</b>  |
| <b>Methane (CH<sub>4</sub>)</b>                      |               |               |               |                |                |
| Energy Industries                                    | 11            | 8             | 49            | 23             | 40             |
| Manufacturing and Construction                       | 170           | 40            | 55            | 112            | 355            |



**Table 6. Historical Energy Sector GHG Emissions (Gg CO<sub>2</sub>-e)**

|   |               |               |               |                |                |
|---|---------------|---------------|---------------|----------------|----------------|
| Transport   | 45            | 73            | 125           | 50             | 46             |
| Other Sectors   | 1,533         | 2,736         | 1,692         | 2,048          | 2,046          |
| Fugitive Emissions  | 227           | 3,530         | 91            | 372            | 560            |
| Sub-total (Energy Sector)   | <b>1,759</b>  | <b>6,387</b>  | <b>2,013</b>  | <b>2,605</b>   | <b>3,046</b>   |
| Sub-total (Energy Sector excluding Transport Sector)                  | <b>1,714</b>  | <b>6,314</b>  | <b>1,888</b>  | <b>2,555</b>   | <b>3,000</b>   |
| <b>Nitrous Oxide (N<sub>2</sub>O)</b>                                 |               |               |               |                |                |
| Energy Industries   | 39            | 84            | 168           | 172            | 289            |
| Manufacturing and Construction  | 347           | 88            | 95            | 148            | 453            |
| Transport   | 42            | 73            | 332           | 477            | 490            |
| Other Sectors   | 289           | 539           | 257           | 244            | 245            |
| Fugitive Emissions  | -             | -             | 0             | 0              | 0              |
| Sub-total (Energy Sector)   | <b>717</b>    | <b>784</b>    | <b>851</b>    | <b>1,043</b>   | <b>1,477</b>   |
| Sub-total (Energy Sector excluding Transport)                         | <b>675</b>    | <b>711</b>    | <b>529</b>    | <b>566</b>     | <b>987</b>     |
| <b>Total GHG Emissions (Energy Sector)</b>                            | <b>50,038</b> | <b>69,670</b> | <b>77,289</b> | <b>106,143</b> | <b>129,286</b> |
| <b>Total GHG Emissions (Energy Sector excluding Transport Sector)</b> | <b>33,923</b> | <b>43,732</b> | <b>53,117</b> | <b>74,895</b>  | <b>99,854</b>  |

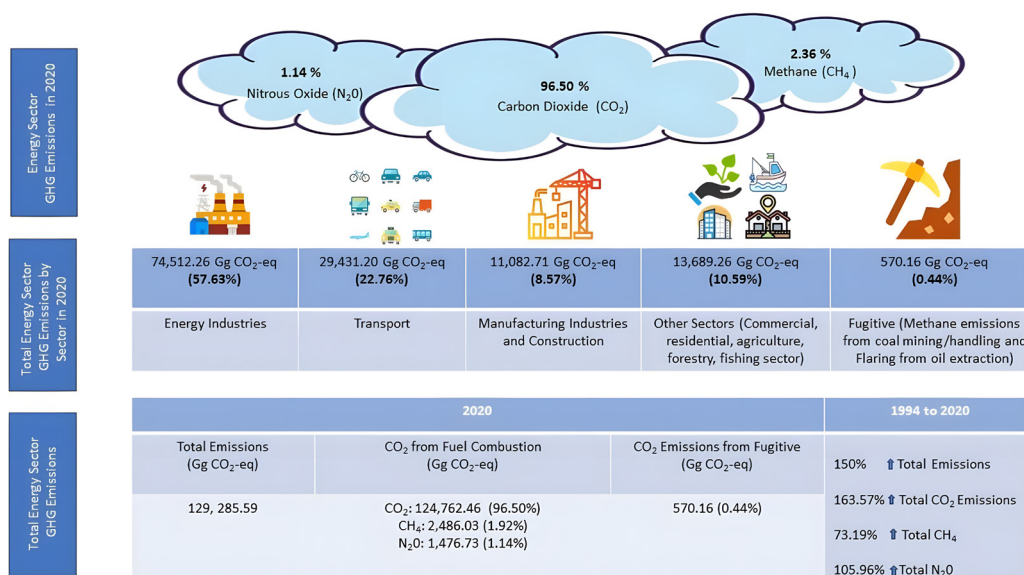
(a) Tracking Greenhouse Gases (A Guide for Country Inventories). Manila Observatory, 1999.

(b) Tracking Greenhouse Gases: An Inventory Manual. DENR, 2011.

(c) Sectoral Inventory: Energy. EPPB, DOE, 2019. The 2010 GHG emission's Gg CO<sub>2</sub>e was calculated using the Global Warming Potential (GWP) values of the 4th Assessment Report, 2014 (AR4) with 25 and 298 GWPs for CH<sub>4</sub> and N<sub>2</sub>O, respectively.

(d) The 2015 and 2020 GHG inventory was calculated using GWP values of AR5 with the 28 and 265 GWPs for CH<sub>4</sub> and N<sub>2</sub>O, respectively.

Figure 15 shows the energy sector emitted a total of 129,285.59 gigagrams carbon dioxide equivalent (GgCO<sub>2</sub>e) in 2020 broken down as follows: 124,762.46 Gg CO<sub>2</sub>, 108.80 Gg CH<sub>4</sub>, which is equivalent to 3,046.40 Gg CO<sub>2</sub>e, and 5.57 Gg N<sub>2</sub>O, which is equivalent to 1,476.73 Gg CO<sub>2</sub>e.

**Figure 15. Sectoral GHG Emission in the Energy Sector in 2020**

Under the 2006 IPCC Guidelines, the sources of emissions in the energy sector are classified into three main categories, namely:

- 1. Fuel Combustion.** This category covered GHG emissions from the combustion of fossil fuels such as coal, oil and oil products, and natural gas from four sources: (a) energy industries; (b) manufacturing industries and construction; (c) transport; and (d) other sectors.

1.a **Energy Industries** comprise emissions from fuel combusted by the fuel extraction and energyproducing industries. The GHG emissions from this category include emissions from electricity generation, petroleum refining, and other energy industries, particularly from offshore oil and gas extraction, processing and upgrading of natural gas, and coal mining. In 2020, the GHG emissions from this category accounted for 74,512.26 GgCO<sub>2</sub>e representing 57.6 percent of the total GHG emissions from the energy sector. The bulk of the emissions were from electricity generation, which emitted 71,196.62 GgCO<sub>2</sub>e, comprising 95.6 percent of the total emissions from the energy industries.

1.b **Manufacturing Industries and Construction** cover the emissions from the combustion of fuels in industry, including combustion for the generation of electricity and heat for own use. The sub-categories correspond to the International Standard Industrial Classification of all Economic Activities (ISIC). The manufacturing industries and construction emitted a total of 11,082.71 GgCO<sub>2</sub>e, accounting for 8.6 percent of the energy sector's total GHG emissions. About a third of the total emissions came from the non-metallic minerals industry, which includes the cement industry.

1.c **Transport** includes emissions from domestic aviation, road transportation, railways, and domestic navigation. The total GHG emissions from the transport sector reached 29,431.20 GgCO<sub>2</sub>e, representing 22.8 percent of the energy sector's total GHG emissions in 2020. The road transportation emitted 26,214.61 GgCO<sub>2</sub>e, accounting for 89.1 percent of the total emissions of this sector. The water-borne navigation followed next with 2,360.04 GgCO<sub>2</sub>e, equivalent to 8.0 percent share of the transport total emissions.

1.d **Other Sectors** cover GHG emissions from combustion activities, including combustion for the generation of electricity and heat for own use in the commercial, residential, and agricultural/forestry/fishing sectors. In 2020, the GHG emissions from this category reached a total of 13,689.26 GgCO<sub>2</sub>e, making up 10.6 percent of the total GHG emissions from the energy sector. The commercial or institutional sector accounted for 7,603.11 GgCO<sub>2</sub>e, while the residential and agriculture/forestry/fishing sectors accounted for 5,429.60 GgCO<sub>2</sub>e and 656.54 GgCO<sub>2</sub>e, respectively.

2. **Fugitive Emissions.** This category made up the remaining 0.44 percent of the energy sector emissions in 2020 at 570.16 Gg CO<sub>2</sub>e. The CH<sub>4</sub> emission from coal mining and handling at 560.20 Gg CO<sub>2</sub>e largely contributed to the fugitive emissions. Flaring from oil extraction made up the remaining emissions at 9.95 Gg CO<sub>2</sub>e. The amount of flared and vented gas from natural gas extraction industry was encoded in the 2006 IPCC Inventory Software, which considered the amount invalid for being too small and thus, was removed from the calculation.

3. **Carbon Dioxide Capture and Storage.** The Carbon Capture and Storage (CCS) captures the CO<sub>2</sub> that is emitted to the atmosphere and stores it underground or under the seabed. At present, there is no CCS in the country. Hence, this category is not calculated and included in the inventory report.

Improvement in GHG inventory is needed particularly in data collection, archiving, and quality. Another area to be enhanced is using quality assurance and quality control (QA/QC) for the process of developing the GHG Inventory. Improvement on activity data and emission factors' quality is the required priority for the development of GHG inventory, especially in key category sectors where application of higher tier approach is expected.

In the energy sector, the focus is on the following: (1) data collection systems; (2) capacity building to upgrade the quality of activity data required; and, (3) development of emission factors for oil and gas, coal, and electricity grid.



## National Grid Emission Factor

Devised by the UNFCCC and as provided in Article 12 of the Kyoto Protocol, the Clean Development Mechanism (CDM) allows a country party to the UNFCCC, with an emission-reduction or emissionlimitation commitment under the Protocol, to implement an emission-reduction project in developing countries. This Mechanism provides Annex I Parties (industrialized countries and transition economy countries) an additional option to meet emission limitation and reduction targets through certified emission reduction (CER) credits earned from the projects. One CER credit is equivalent to one ton of CO<sub>2</sub> (tCO<sub>2</sub>). In return, the Non-Annex I Parties are assisted in achieving sustainable development by putting up low-carbon technologies and systems in core sectors. EO 320 dated 25 June 2004 designated the DENR as the National Authority for CDM and the DOE to take the lead role in the evaluation of energy related CDM projects.

The DOE Department Order (DO) 2011-08-0009 recognizes the National Grid Emission Factor (NGEF) as the CDM reference for energy-related projects and describes the NGEF as the per grid standard amount of GHG emitted related to the activities performed on a particular grid. The NGEF data/information facilitates the processing and approval of energy related CDM projects and serves as the authoritative reference for project proponents, developers, validators, and verifiers. The NGEF serves as a benchmark in computing GHG reduction and equivalent CER credits associated with the grid-connected electricity generated from CDM projects.

The NGEF computation includes: (1) identification of relevant electricity systems; (2) qualification for inclusion of off-grid power plants based on capacity; (3) selection of appropriate method to determine the operating margin (OM); (4) calculation of the resultant OM emission factor; (5) calculation of the build margin (BM) emission factor; and, (6) calculation of the combined margin (CM) emission factor. The methodology used by the DOE is in accordance with the tool to calculate the emission factor for an electricity system published by the UNFCCC.<sup>6</sup> The following options for steps (2) and (3) are selected based on the respective characteristics of the Luzon-Visayas Grid and the Mindanao Grid. These options apply to both grids.

- In step (2), only grid power plants are included in the calculation for both grids because the total capacity of off-grid power plants is less than 10.0 percent of the total capacity of grid power plants in the electricity system.
- In step (3), since the low-cost/must-run resources constitute less than 50.0 percent of the total grid generation (excluding electricity generated by off-grid power plants) based on average of five (5) most recent years, simple OM approach will be used to calculate the operating margin emission factor.

Table 7 shows the OM, BM, and CM emission factors for the Luzon-Visayas Grid and Mindanao Grid for the periods 2015-2017 and 2019-2021. The OM emission factor covers the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity. On the other hand, the BM emission factor covers the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity. Whereas the CM emission factor is the weighted average of the OM and BM emission factors.

**Table 7. National Grid Emission Factors for the Luzon-Visayas Grid and Mindanao Grid for the Periods 2015-2017 and 2019-2021**

| Parameters  | Luzon-Visayas |           |            | Mindanao  |           |            |
|---|---------------|-----------|------------|-----------|-----------|------------|
|   | 2015-2017     | 2019-2021 | Difference | 2015-2017 | 2019-2021 | Difference |
| <b>Simple Operating Margin Emission Factor, tCO<sub>2</sub>/MWh</b>     |               |           |            |           |           |            |
| Simple Operating Margin Emission Factor, tCO <sub>2</sub> /MWh          | 0.7122        | 0.6935    | (0.01866)  | 0.77968   | 0.85223   | 0.07254    |
| <b>Build Margin Emission Factor, tCO<sub>2</sub>/MWh</b>                |               |           |            |           |           |            |
| Build Margin Emission Factor, tCO <sub>2</sub> /MWh                     | 0.5979        | 0.7426    | 0.14475    | 0.80450   | 0.78237   | (0.02212)  |
| <b>Combined Margin Emission Factor, tCO<sub>2</sub>/MWh</b>             |               |           |            |           |           |            |
| Combined Margin Emission Factor (Wind and Solar), tCO <sub>2</sub> /MWh | 0.6836        | 0.7058    | 0.02219    | 0.78589   | 0.83476   | 0.04888    |
| Combined Margin Emission Factor (Other Projects), tCO <sub>2</sub> /MWh | 0.6550        | 0.7181    | 0.12020    | 0.79209   | 0.81730   | 0.02521    |

Source: DOE Power Statistics as of 2021  
DOE National Grid Emission Factor (NGEF)

<sup>6</sup> UN Climate Change, "Methodological tool: Tool to calculate the emission factor for an electricity system, Version 07.0." UNFCCC, 31 August 2018, <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>.



As observed, the OM emission factor for the Luzon-Visayas Grid slightly decreased by 0.01866 tCO<sub>2</sub>/MWh from the 2015-2017 period to the 2019-2021 period, while the BM emission factor increased by 0.14475 tCO<sub>2</sub>/MWh, resulting in increase in the 2019-2021 CM emission factors to 0.7058 tCO<sub>2</sub>/MWh with wind and solar projects and 0.7181 tCO<sub>2</sub>/MWh with other projects.

For the Mindanao grid, the change in the emission factors is rather opposite with a slight increase of 0.07254 tCO<sub>2</sub>/MWh in OM and a slight decrease of 0.02212 tCO<sub>2</sub>/MWh in BM. The 2019-2021 CM emission factors were 0.83476 tCO<sub>2</sub>/MWh with wind and solar projects and 0.81730 tCO<sub>2</sub>/MWh with other projects.

Lower emission factors are preferred as these indicate reduced GHG emissions per unit of energy produced and transmitted through the grid. In terms of CER credits, lower emission factors will mean less CER credits that can be earned from a CDM project given a fixed power generation capacity.

### ***Philippine Emissions Pathways Calculator***

The Philippine Emissions Pathways Calculator (PEPC) is a joint project of the DOE and the United Kingdom (UK) Department for Energy Security and Net Zero (DESNZ) formerly known as the Department for Business, Energy, and Industrial Strategy (BEIS). The tool is a free and open source, transparent, and interactive energy and emissions model that was developed in 2009 by the United Kingdom Department of Energy and Climate Change (DECC), now DESNZ, to help the UK Government plan its low-carbon transition in an evidence-based way.

It allows users to explore future scenarios and their impacts and to create their own energy pathway to the year 2050 by testing different options for reducing GHG emissions while considering the trade-offs.

This tool can be used to engage experts, policy makers, senior officials, politicians, and even the public on how the agriculture, waste, industrial process and product use (IPPU), transport, and forestry and other land use (FOLU), and energy (AWIT-FE) sectors' GHG emissions could be reduced over time while showing the benefits and trade-offs of the different scenarios/possible pathways. This transparent and evidence-based approach will assist in improving future strategies of the Philippines and aid the policy experts and top decision makers in formulating consistent policies and in identifying appropriate sectoral programs and projects to promote low carbon development starting from the planning process.

With its own version of this transparent, interactive energy and emissions model, the DOE aims to:

1. Improve long-term energy strategies;
2. Formulate consistent policies;
3. Identify appropriate sectoral programs and projects to promote low-carbon development starting from the planning process;
4. Support the Implementation and improvements of NDCs;
5. Assess the mitigation actions and targets; and
6. Increase engagement of senior officials, politicians, experts, academics, civil society organizations and the public in determining feasible and credible low-carbon pathways.

The DOE has completed its task of building the initial version of the webtool and initiated focused work on the sectoral models of agriculture, waste, IPPU, transport, and forestry.

Specifically, a comprehensive model was also developed with the assistance of local consultants. It captures the entire Philippine economy and includes all sectors in the National GHG Inventory. The PEPC includes the following: (1) energy demand, (2) energy supply, (3) transport, (4) agriculture (livestock, rice), (5) FOLU, (6) IPPU (cement and recycled aggregate concrete/RAC), and (7) waste and wastewater.

The PEPC was completed and turned over to the DOE on 27 October 2023. The DOE, together with the UK Government, will continue to work with the CCC for the next phase of the project. The PEPC is envisioned to be adopted by the NDC-Technical Working Group as a tool which can support the implementation and improvements of the NDCs.



## International Commitments and Partnerships

**United Nations Framework Convention on Climate Change.** The UNFCCC was adopted in 1992 as an inter-governmental treaty and international political response to combat dangerous human interference with the climate system and sets out a framework for action aimed at stabilizing atmospheric concentrations of GHG to avoid “dangerous anthropogenic interference” with the climate system. The Convention, which entered into force on 21 March 1994, has 198 parties.

The Philippines is required to submit the following reports to the UNFCCC, namely: (1) National Communication (NC), (2) Biennial Update Report (BUR), and (3) Biennial Transparency Reports (BTR).

- (1) The NC is a report that each Party to the Convention prepares periodically in accordance with the guidelines developed and adopted by the COP. Specifically, it is a commitment of each Party (in accordance with Article 12, paragraph 1 of the Convention) to provide the following elements of information, as set out in Article 4, paragraph 1 of the Convention such as: (i) National Greenhouse Gas Inventory; ii) Vulnerability and Adaptation; iii) Mitigation; iv) Technology Transfer, Research and Systematic Observation; v) Education, Training, Public Awareness and Information, Networking and Capacity-Building; and vi) Compilation of National Communication and Integration.
- (2) Like the NC, the Annex 1 and non-Annex 1 Parties to the UNFCCC are required to provide a report on updates of the information presented in the NC through BUR in accordance with UNFCCC COP Decisions 1/CP.16, Decision 2/CP.17, and Annex III of Decision 2/CP.17. The initial BUR must be submitted by December 2014, or in accordance with the Country Party's capability or degree of support, and then every two years as a summary of their NC or as a stand-alone report after that. The submission of the last BUR is in 2024 per UNFCCC COP Decision 1/CP.21, paragraph 98, as BUR will be superseded by a BTR in line with the Enhanced Transparency Framework (ETF) of PA.
- (3) The BTR is a comprehensive report from all Parties to the UNFCCC on the implementation of the PA, which must be submitted every two years starting in 2024. It shall be submitted by all Parties, and thus shall have common reporting requirements, templates, and timeframes with flexibility considerations for developing country Parties.

On the other hand, the NAP outlines adaptation actions, projects, and programs per UNFCCC Decision 1/CP.16 to be prepared by least developed countries and developing countries. Under the Cancun Adaptation Framework (CAF), Parties are invited to plan, prioritize, and implement adaptation actions, projects, and programs with a view of enhancing adaptation actions considering their common but differentiated responsibilities and respective capabilities, and specific national and regional development priorities, objectives, and circumstances.

Pursuant to the mandates under the Climate Change Act, the CCC is leading and coordinating the development, finalization, and submission of national reports to the UNFCCC.

The DOE, as the lead agency for the energy sector, is responsible for conducting, documenting, reporting, archiving, and monitoring of the energy sector GHG inventory. Likewise, the DOE is responsible for complying with and submitting energy sector reports in compliance with the requirements of the CCC in the submission of our National Reports to the UNFCCC. Specifically, the DOE has been in constant coordination with the CCC in the submission of our inputs to the NDCs and the Energy Sector GHG Inventory Reports, BURs and NAPs, including the NCCAP.

**Conference of Parties.** The COP is an annual event serving as the highest decision-making body of the UNFCCC. The COP meetings provide a forum for countries, international organizations, civil society, and other stakeholders to exchange ideas and strategies for addressing climate change and promoting sustainable development. Each year, the COP's participants assess progress in climate change and negotiate and implement new obligations for governments to reduce their GHG emissions. During the COP meetings, parties discuss and negotiate various issues, including adaptation, mitigation, finance, and technology transfer, and work to reach agreements on multiple aspects of the mission to tame climate change.

The DOE has also been in continuous partnership with the CCC in actively engaging in relevant UNFCCC negotiations such as the meeting of the COP and UNFCCC's Subsidiary Body for Implementation (SBI) and Subsidiary Body for Scientific and Technological Advice (SBSTA) intersessional meetings.

The COP27, hosted by the Arab Republic of Egypt, was held in November 2022. It focused on the negotiation issues and decision areas on Mitigation, Adaptation, Loss and Damage, Climate Finance, Capacity Building, Technology Development and Transfer, Global Stocktake, Gender and Climate Action, among others.

The energy sector plays a vital role in providing technical and expert views on what climate change mitigation, adaptation, and disaster risk reduction pathways the country should take. The DOE's participation in UNFCCC's meetings is a continuing task to follow and to work on the discussions on the abovementioned workstreams.

The DOE actively participated in COP28 held in Dubai, United Arab Emirates on 30 November -13 December 2023, as well as related meetings/conference/dialogues as a member of the Philippine Delegation.

The energy sector has long been identified as part of the climate problem and the solution. Thus, the agreed decisions during the UNFCCC negotiations will have a great impact on the energy sector as the current trend on global climate crises solutions goes along the way of the just energy transition. In addition, looking at the energy sector allows us to examine the concrete impacts that international climate law instruments can have on national and local levels of action and decision-making.

**Kyoto Protocol.** Under the UNFCCC, the Kyoto Protocol was adopted on 11 December 1997 and entered into force on 16 February 2005 as the first legally binding climate treaty. Currently, it has 192 Parties, and requires industrialized countries and economies in transition to limit and reduce GHG emissions in accordance with agreed individual targets. Further, the UNFCCC requires those countries to report their PAMs on mitigation periodically.

The Kyoto Protocol is based on the principles and provisions of the Convention and follows its annexbased structure. It only binds developed countries and places a heavier burden on them under the principle of "common but differentiated responsibility and respective capabilities," because it recognizes that they are largely responsible for the current high levels of GHG emissions in the atmosphere.

During the first commitment period, 37 industrialized countries and economies were in transition and the European Community committed to reduce GHG emissions to an average of 5.0 percent against 1990 levels. On the other hand, during the second commitment period, Parties committed to reduce GHG emissions by at least 18.0 percent below 1990 levels in the eight-year period from 2013 to 2020. One important element of the Kyoto Protocol was the establishment of flexible market mechanisms, which are based on the trade of emissions permits. Likewise, it also offered an additional means to meet their targets by way of three market-based mechanisms – (1) International Emissions Trading, (2) CDM, and (3) Joint implementation.

**Paris Agreement.** Under the UNFCCC, the PA, a new legally binding framework for an internationally coordinated effort to tackle climate change, was signed and adopted by 196 UN member states at the COP 21 on 12 December 2015 and entered into force on 4 November 2016. The PA requires all countries to submit NDCs and review the aggregate progress on mitigation, adaptation, and means of implementation every five years through a Global Stocktake (GST).

Aside from limiting the global average temperature increase, the PA also aims to increase Parties' ability to adapt to the adverse impacts of climate change and make financial flows consistent with a pathway towards low-GHG emissions and climate-resilient development.

Article 3 of the Agreement provides the general guiding principles on nationally determined contributions to the global response to climate change by all Parties, while recognizing the need to support developing country Parties for the effective implementation of this Agreement. Meanwhile, Article 4 states that all Parties should act to protect the climate system based on equality and "common but differentiated responsibilities and respective capabilities." Likewise, developed country Parties should take the lead role in mitigating emissions, provide the developing country Parties with new and additional financial resources to meet the full cost that will be incurred to reduce emissions and implement adaptation actions, as well as incremental costs of technology, capacity building, and other mitigation measures.

## C. RESILIENCY AND SECURITY OF ENERGY INFRASTRUCTURE

In an era defined by rapid technological advancements, evolving geopolitical dynamics, pressing climate change effects, and transnational threats, enhancing resiliency and ensuring security of energy-related infrastructure and facilities should be accorded with paramount importance. This endeavors to embrace a whole-of-nation and government approach to effectively respond the multifaceted forces and vulnerabilities that have significant impacts on critical energy infrastructures and systems in the country. Energy remains as one of the sectors most vulnerable to natural and human-induced hazards.

Based on the National Electrification Administration's (NEA) report, the Electric Cooperatives (ECs) endured massive damage from tropical cyclones. In 2021, Super Typhoon Odette, internationally known as Typhoon Rai, resulted in estimated damage to ECs of more than PhP283 million, while in 2022 Typhoons Karding (Typhoon Noru) and Paeng (Tropical Storm Nalgae) brought damages of around PhP226 million. From 2014-2020 alone, ECs incurred total damages costs of PhP6.55 billion due to natural disasters. Moreover, the Energy Regulatory Commission (ERC) reported more than PhP10 billion from Force Majeure Event Capital Expenditure (CAPEX) Applications of the distribution utilities (DUs) and the National Grid Corporation of the Philippines (NGCP) from 2008-2023.<sup>7</sup> Aside from the damages, the long period of energy disruption likewise affected economic activities in the country.

The Philippine Statistics Authority (PSA) conducted an analysis translating the damages and the corresponding economic impacts of energy disruption, which revealed that the economic cost of losing a kWh of load amounts to PhP247.<sup>8</sup> With the staggering losses not only to human lives and properties but also to the economy, there is an urgent need to ensure the climate and disaster resiliency of the energy infrastructures and facilities.

### Current Policy Initiatives on Climate and Disaster Resilience

**Climate and Disaster Resilience under the Philippine Development Plan (PDP) 2023-2028.** As climate change remains highly relevant, the inclusion of the climate change agenda in the PDP 2023- 2028 will further reinforce the commitment of the government and key stakeholders and partner institutions to deliver key climate actions.

Chapter 15 of the PDP 2023-2028, titled *"Accelerate Climate Action and Strengthen Disaster Resilience,"* states that *"By 2028, communities, institutions, and the natural and built environment in the Philippines are more resilient to the impacts of natural hazards and climate change."* The primary outcomes to be pursued to address the challenges brought by climate change include: 1) increasing climate and disaster risk resilience of communities and institutions; 2) enhancing ecosystem resilience; and, 3) enabling a transition to a low-carbon economy. With these outcomes, the goal is to improve the governance and intersectionality of climate change and natural hazard resilience.<sup>9</sup>

<sup>7</sup> Energy Regulatory Commission, *Presentation on Challenges and Best Practices on CAPEX Application on Force Majeure*, Energy Resiliency Roadmap Workshop, May 31, 2023.

<sup>8</sup> New Platform Group, LLC, *Presentation on Embedding Resiliency in Investors' Decisions*, Mr. Jose Manuel Barroco, 2023 Energy Resiliency Forum, July 25, 2023.

<sup>9</sup> National Economic and Development Authority (NEDA), *Philippine Development Plan 2023-2028*, 2023, 265-367





**Climate Change Adaptation and Resilience.** The National Climate Change Action Plan (NCCAP), a local operational plan, has been formulated through the National Framework Strategy on Climate Change (NFSCC). The NCCAP provides a set of strategic actions to be implemented for the mitigation and adaptation of climate change, as well as sustainable development in the Philippines, in which sustainable energy is considered as one of the seven (7) priority areas.<sup>10</sup> Moreover, the energy sector will be identifying medium- and long-term adaptation needs based on the National Adaptation Plan (NAP) which envisions the country being able to adapt to the accelerating climate change.<sup>11</sup>

**National Disaster Risk and Reduction Management Plan (NDRRMP) 2020-2030.** To implement Republic Act (RA) 10121 or the Philippine Disaster Risk Reduction and Management (PDRRM) Act of 2010, the National Disaster Risk Reduction and Management Council (NDRRMC) developed the NDRRM Framework (NDRRMF) in 2011. Said framework contains a comprehensive DDR community-based approach to address all sectors and hazards. The NDRRMF operationalization led to the development of the NDRRMP. The NDRRMP fulfills the requirement of the PDRRM Act covering four (4) thematic areas, namely: 1) Disaster Prevention and Mitigation, 2) Disaster Preparedness, 3) Disaster Response, and 4) Disaster Rehabilitation and Recovery. This shall serve as the roadmap toward the realization of the vision of the NDRRMF.<sup>12</sup>

The continuous update of the NDRRMP ensures its relevance and effectiveness to the evolving risks of disasters faced by the country. With this, the NDRRMP 2020-2030 establishes the linkage between DRRM, climate change adaptation, and human security by focusing on climate and disaster risks.

**National Security Policy (NSP) 2023-2028.** The NSP is the overarching policy document that spells out the aspirations and defines the strategic direction of the country as a nation-state. Under Chapter 3, the government is mandated to: 1) protect and secure energy supply against threats such as cyberspace, price shocks and distortions, and disruptions, among others, 2) protect critical infrastructure against climate change and human-induced hazards, 3) sustain and develop energy sources, 4) diversify energy mix with the use of more indigenous sources, 5) develop renewable energy sources to reduce carbon emissions and support the country's growing economic demands, and 6) promote energy efficiency as a way of life.<sup>13</sup>

**National Cybersecurity Plan (NCSP) 2023-2028.** The rapid rise of digitalization from robust technological innovations in the past years brought challenges to national security as increasing dependence on technology also gives rise to crimes committed in this domain. Hence, the government proactively takes precautionary measures to ensure security of this domain on national defense and the security of cyberspace.

Supplementing the key legislations to address the cybersecurity challenges such as RA 10173 or the "Data Privacy Act of 2012"<sup>14</sup> and RA 10175 or the "Cybercrime Prevention Act of 2012"<sup>15</sup>, the Department of Information and Communications Technology (DICT) by virtue of RA 10844 or the "Department of Information and Communications Technology Act of 2015" initiated another important development in strengthening the country's cybersecurity posture through the adoption of the NCSP 2023-2028. This plan outlines the priority programs of the government to improve cybersecurity in the country toward its mission of "Ensuring a Trusted, Secure, and Reliable Cyberspace for every Filipino", which is embodied in six (6) pillars.

**Supplemental to the DOE Energy Resiliency Policy (ERP).** Recognizing the need to address any existing gaps and ensure the adequacy, responsiveness, and effectiveness of the Energy Resiliency Policy, the DOE issued a supplementing policy in 2022. The Department Circular (DC) 2022-06-0028, titled "*Supplementing the DC2018-01-0001 on the Energy Resiliency Planning and Programming of the Energy Sector and on Task Force on Energy Resiliency (TFER) Functions and Structure to Mitigate Impacts of Disasters*" or the Supplemental ERP was issued on 24 June 2022 to bring further enhancement to DC2018-01-0001.

<sup>10</sup> Climate Change Commission, *NCCAP 2011-2028*, 2011

<sup>11</sup> *Ibid.*

<sup>12</sup> NDRRMC, *NDRRMP 2011-2028*, 2011

<sup>13</sup> *NSP 2023-2028*, 23.

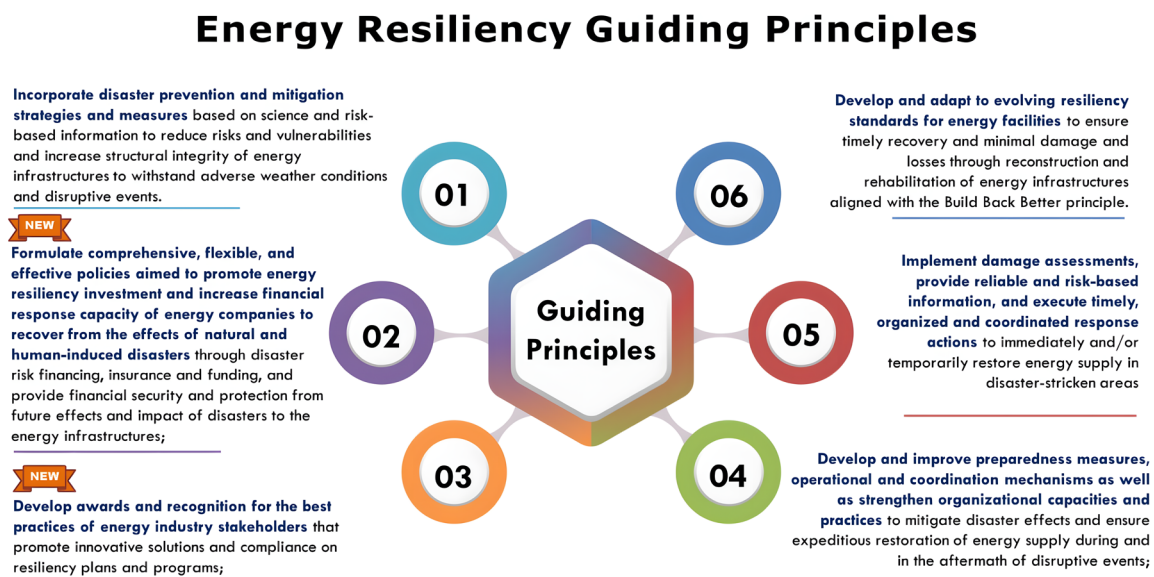
<sup>14</sup> RA 10173.

<sup>15</sup> RA 10175.

The provisions under the Supplemental ERP have been modified to aid in the integration of energy resiliency planning and programming to increase the disaster risk reduction efforts of the energy sector by focusing on the following key areas:

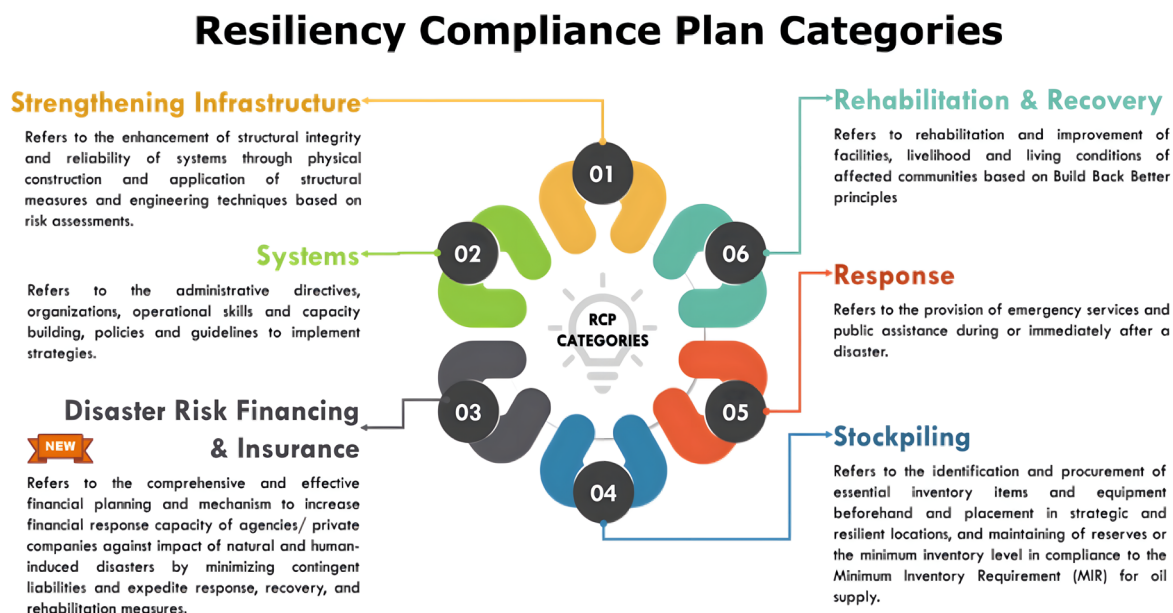
1. **Improved Energy Resiliency Guiding Principles.** The guiding principles in the Supplemental ERP have been enhanced and aligned with the DRRM framework by expanding the original four guiding principles to six as shown in *Figure 16*.

Figure 16. Improved Energy Resiliency Guiding Principles Based on The Supplemental ERP



2. **Enhanced Resiliency Compliance Plan (RCP) Categories.** The RCP Categories have been expanded by adding disaster risk financing, insurance, rehabilitation, and recovery to provide comprehensive coverage and address key aspects of the financial resilience of energy companies after a disaster (*Figure 17*).

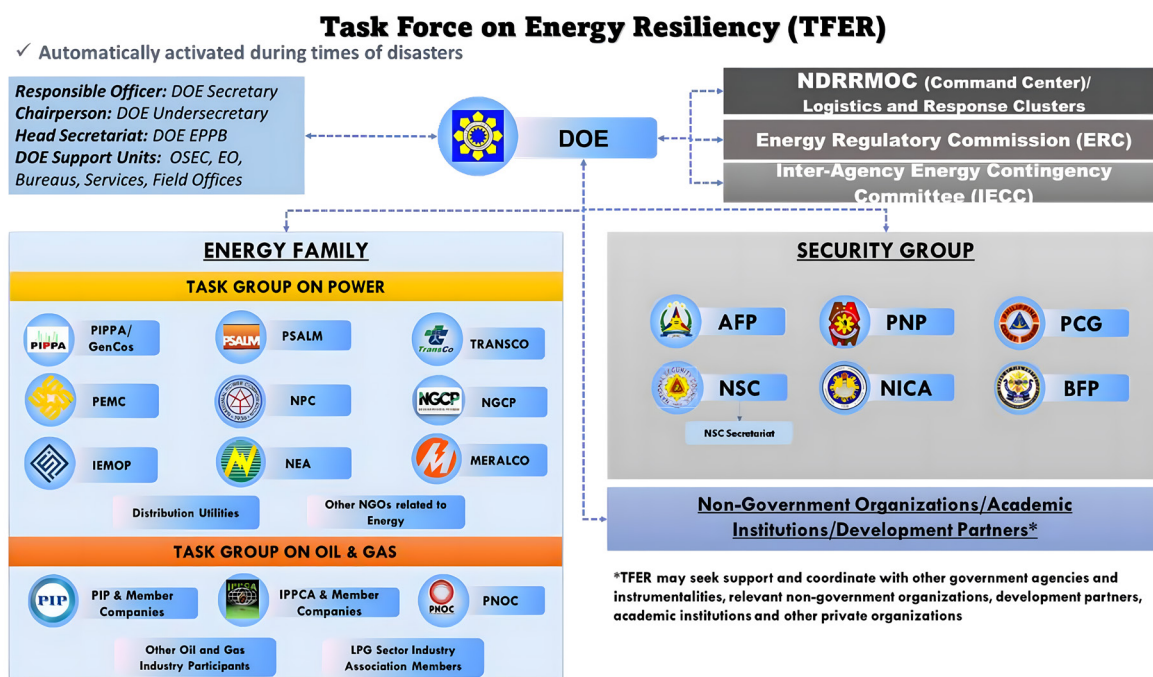
Figure 17. Enhanced Resiliency Compliance Plan (RCP) Categories based on the Supplemental ERP



3. **Expansion of the Organizational Structure and Functions of the TFER.** Empowered with coordination, integration, supervision, monitoring, and evaluation functions related to energy resiliency, the TFER serves as a central authority in harmonizing mitigation, preparedness, response, and restoration efforts before and during calamities and emergencies.

Since its creation in 2018, the TFER has actively responded to various natural and human-induced disasters. Recognizing the significance of its role, the organization and function of the TFER have been expanded through the Supplemental ERP. The updated composition of the TFER includes the attached and cooperating agencies grouped into the **Task Group on Power** focused on the immediate restoration of power supply and the **Task Group on Oil and Gas** responsible for implementing contingency measures to ensure an adequate supply of petroleum products in the event of a disaster or oil disruption (Figure 18).


Figure 18. Expanded Organizational Structure and Functions of TFER based on the Supplemental ERP



Additionally, the TFER has the flexibility to establish Technical Working Groups (TWGs) to address specific issues and create "Task Groups" for specific concerns as necessary. The TFER can seek support from relevant security agencies, non-governmental organizations (NGOs), development partners, academic institutions, and private organizations during disaster response and in the implementation of other energy resiliency-related matters.

Figure 19. Expanded TFER Functions based on the Supplemental ERP

## EXPANSION OF TFER FUNCTIONS AND ORGANIZATION

| The TFER shall perform the following functions in addition to the |    |  |  | outlined functions under Section 7.2 of DC2018-01-0001:  |                           |
|---|----|--|---|--|---------------------------|
| PREVENTION AND MITIGATION   | 1  | Formulates and adopts comprehensive and risk-based energy resiliency policies, strategies, plans and programs responsive to the NDRRM Plan priority areas, long-term goals and objectives.   |   | Develops a harmonized disaster reporting tool and protocol for ease and timely reporting of critical and relevant information during and after the disaster events.  | 11                        |
|   | 2  | Conducts vulnerability and risk assessment of energy systems and develops a harmonized exposure map, risk information and other geospatial information of energy facilities for the planning process needs of the energy sector.   |   | TFER shall be the primary organization activated during disasters, calamities or disruptions caused by natural or human-induced hazards and performs the appropriate disaster response measures  | 12                        |
|   | 3  | Develops appropriate mechanisms and strategies on disaster risk financing and insurance policies and programs.   |   | TFER to provide disaster response equipment as necessary to immediately address the temporary power supply issues of communities, facilities, and other critical infrastructures affected by natural and human-induced disasters.  | 13                        |
|   | 4  | Promotes innovative solutions and shares the best practices on energy resiliency   |   | TFER, through the Secretariat, shall closely coordinate with the NDRRMOC Logistics and Response Clusters and other relevant agencies to perform the function under Section 7.1.9.  | 14                        |
| PREPAREDNESS  | 5  | Develops and conducts organizational capacity building programs/initiatives to strengthen disaster preparedness.   |   | Participate in the conduct of Post-Disaster Needs Assessment (PDNA) of the NDRRMOC.  | 15                        |
|   | 6  | Conducts policy research activities with policy recommendations and regulatory measures/interventions that would be beneficial on the promotion of energy resiliency and for the attainment of the functions of TFER.  |   | The disaster response of TFER, upon recommendation to the Chairperson, shall be deactivated when the threats to energy supply and services in the country has been adequately addressed, and the supply of power and petroleum products of the country have been "normalized". | 16                        |
|   | 7  | Develops harmonized disaster preparedness and response plans, protocols, and manuals of operations of the energy sector.   |   | Develops and adopts appropriate energy resiliency standards on the construction, retrofitting and rehabilitation to increase disaster resilience of energy infrastructure systems based on the BUILD BACK BETTER principle.  | 17                        |
|   | 8  | Promotes energy resiliency of critical infrastructure such as but are not limited to hospitals, water systems, telecommunication, transportation facilities, schools, data hubs, financial services, energy facilities, food hubs, military camps and other vital government facilities.       |   |  |                           |
|   | 9  | Develops and implements a harmonized National Oil Contingency Plan (NOCP) that would address vulnerabilities and threats to the oil supply chains stemming from both local and international uncertainties and ensures the continuous, adequate and stable supply of petroleum in the country. |   |  |                           |
|   | 10 | Establishes a link and coordinated response among its members for the continuous monitoring, mobilization and deployment of the Quick Restoration Teams, or other task forces and/or response  |   |  |                           |
|   |    |  |   |  | RESPONSE & EARLY RECOVERY |
|   |    |  |   |  | REHABILITATION            |



As the lead agency, the DOE collaborates with the NDRRMC, ERC, and Inter-Agency Energy Contingency Committee (IECC) to ensure effective coordination and synergy in disaster response and energy contingency planning, among others. To further improve the responsiveness and relevance of TFER on DRRM, the TFER must carry out its expanded functions as presented in (Figure 19).

The functions of TFER are aligned with the NDRRMP priority areas, long-term goals, and objectives, specifically on Disaster Prevention and Mitigation, Disaster Preparedness, Disaster Response, and Disaster Rehabilitation and Recovery.

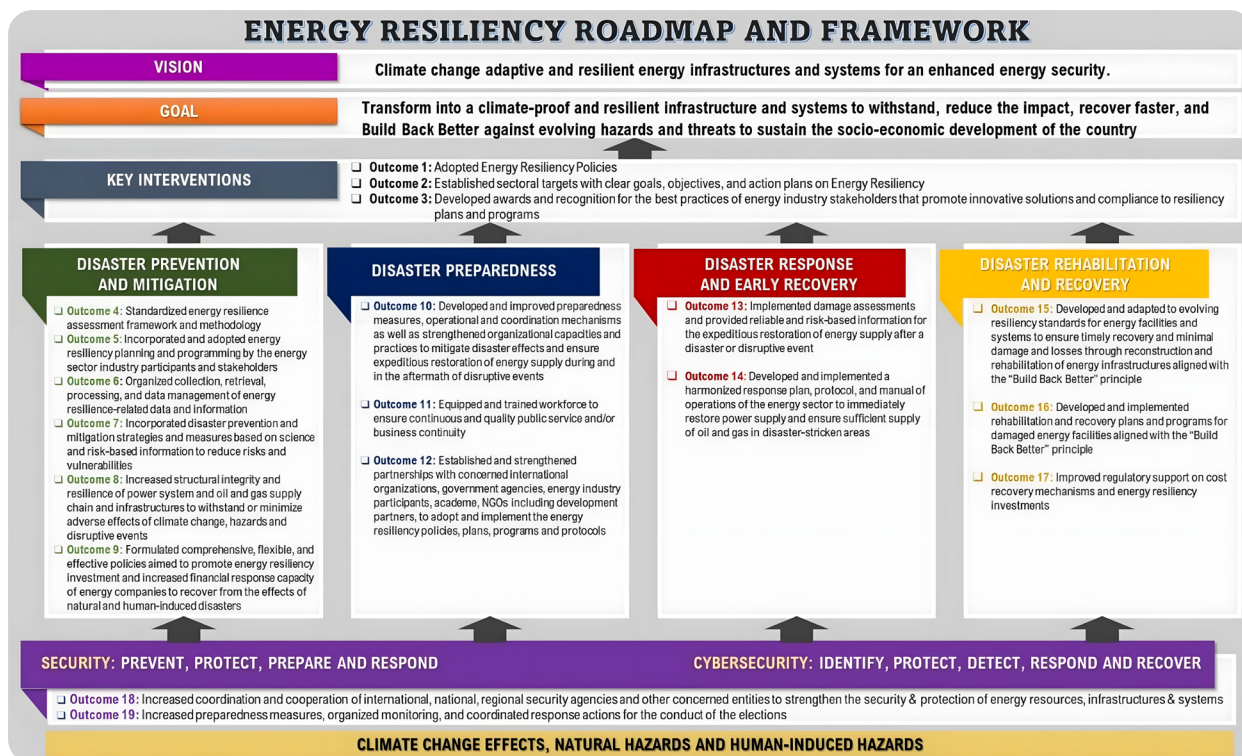
4. **Energy Resiliency Awards and Recognition.** The DOE shall establish an award and recognition to encourage energy stakeholders and industry participants to integrate energy resiliency measures into their planning and programming as incentive to the industry. Pursuant to Section 6 of the Supplemental ERP, energy participants that comply with the RCP requirements and demonstrate validated outputs and outcomes based on the prescribed energy resiliency plans and programs as specified in Section 5 of the DC 2022-06-0028 shall be entitled to the Energy Resiliency Excellent Awards (EREA).

## Energy Resiliency Roadmap and Framework 2023-2028

Consistent with the various plans and programs on resilience, the DOE, being the lead agency of the TFER, envisions climate change adaptive and resilient energy infrastructures and systems for enhanced energy security. Thus, the goal is to transform into a climate-proof and resilient infrastructure and systems to withstand, reduce the impact, recover faster, and 'Build Back Better' against evolving hazards and threats to sustain the socio-economic development of the country.

The DOE, with the cooperation and support of its energy stakeholders, concerned government agencies, and other entities, plans to realize the vision and accomplish its goal through the 19 Outcomes and corresponding outputs specified to address the climate change concerns and threats of natural and human-induced hazards.

Figure 20. Energy Resiliency Roadmap and Framework





The first three (3) Outcomes are focused on adopting the appropriate and relevant policies and plans set by the DOE as a guide for the energy sector. Meanwhile, Outcomes 4 to 17 are distributed across the four thematic pillars under the NDRRMP. Lastly, Outcomes 18 and 19 focus on addressing the human-induced hazards, particularly those threatening the physical security of critical infrastructures, disrupting the energy supply chain, and systems vulnerable to cybersecurity (Figure 20).

## A. Major Outputs for Climate-proof and Disaster-resilient Energy Infrastructures and Systems

There are **14 Outcomes** with **22 corresponding Outputs/Deliverables** targeted to be initiated and accomplished from 2023 to 2028. The various outputs will undergo various key activities to be performed by the assigned Task Groups or TWGs under TFER. Some of the programs will be implemented in collaboration and support of the different stakeholders, development partners, and NGOs.

### 1. Disaster Prevention and Mitigation

#### \* Outcome 4: Standardized assessment framework and methodology for the RCPs and Energy Resilience Scorecard.

**Energy Resilience Assessment Framework and Methodology (ERAFM).** The ERAFM is a comprehensive approach that will be developed to assess, manage, and enhance the resilience of energy infrastructures and systems, particularly in the face of climate change and human-induced hazards. The DOE, in collaboration with the United States Agency for International Development-Energy Secure Philippines (USAID-ESP) and other energy stakeholders, is working towards the development of a standardized ERAFM that encompasses various components and processes. This framework aims to effectively identify and assess potential hazards and vulnerabilities while developing adequate and implementing solutions to increase the resilience of the energy sector.







Based on the National Renewable Energy Laboratory's (NREL) "Energy Resilience Assessment Methodology for Sites, Bases, and Campuses", this methodology consists of six processes, namely: 1) assessing the baseline resilience; 2) identifying and scoring hazards and vulnerabilities; 3) analyzing risks; 4) identifying and prioritizing mitigation actions; 5) developing an action plan; and, 6) implementing solutions. The ERAFM shall build upon this framework by expanding its scope and enhancing its applicability to the Philippine energy context.

**RCP Assessment.** The Energy Resiliency Policy issued in 2018 enjoined all energy industry participants to submit an RCP to the DOE, which shall contain structural and non-structural measures options, to gauge infrastructure and human resource preparedness during and in the aftermath of disruptive events.

The DOE, in partnership with the USAID-ESP, conducted the assessment of the 161 RCP submissions for C.Y. 2018-2021 from the power generation companies, transmission, DUs, and oil and gas both from downstream and upstream stakeholders (Figure 21).

Based on the assessment, the ECs had the lowest and declining turnout of RCP submissions from 2018-2020. The ECs encountered difficulty in accomplishing the RCP together with the other requirements such as the Vulnerability and Risk Assessment (VRA), Emergency

Figure 21. RCP Assessment Summary of Results

| Database Summary  | BATCH 1  | BATCH 2  |
|---|--|--|
|  Total Energy Companies                | GENCOS, PDUs, Upstream and Downstream Oil & Gas, and Transmission  | Electric Cooperatives  |
|  Total RCP Submissions                 | <b>130</b>   | <b>31</b>  |
|  Compliant Region                      | <b>Central Luzon</b>   | <b>CAR and Region 8</b>  |
|  Pillar with Highest No. of Activities | <b>Systems 716</b>   | <b>Systems 145</b>   |
|  Bulk of Investments                   | <b>Strengthening Infrastructure and Stockpiling</b>  | <b>Strengthening Infrastructure and Systems</b>                    |
|  Submission rate vs. Universe          | GenCos: 118 of 261 (45%)<br>PDUs: 9 of 15 (60%)<br>Oil & Gas (Upstream): 2 of 19 (11%)<br>Oil & Gas (Downstream): 16 of 20 (80%) | 2018: 6 of 121 (5%)<br>2019: 11 of 121 (9%)<br>2020: 7 of 121 (6%) |

Response Plan (ERP), and Mitigation Plan (MP) pursuant to RA 11039 or the Electric Cooperative Emergency and Resiliency Fund (ECERF) Act.

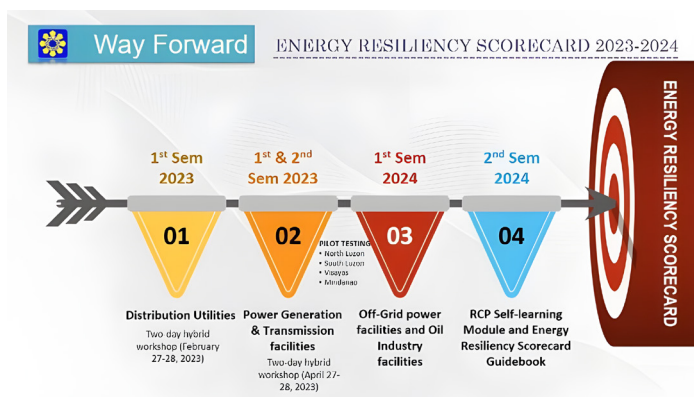
Likewise, a low submission rate was also observed from upstream oil and gas wherein only two (2) companies submitted an RCP out of the 19 companies. On the other hand, the RCP submission rate from the downstream oil and gas was at 80.0 percent or 16 out of 20 companies.

In order to address the low turnout and increase compliance, the RCP template shall be improved based on the inputs from the previous submissions of the energy stakeholders and from a series of orientation activities to be conducted. Correspondingly, the National Power Corporation (NPC) and NEA, in coordination with DOE, shall also develop the standard RCP template that incorporates the inputs from the VRA, ERP and MP. Likewise, the updated RCP templates shall be linked with the energy resilience scorecard (ERS).

The increased and improved RCP submissions and compliance of energy stakeholders will lead to more reliable baseline data on energy resilience-related information and will eventually be used as a reference for the policy development of the energy resiliency standards, risk-transfer mechanisms, and investments, among others.

**Energy Resiliency Scorecard.** The ERS is a self-assessment tool that determines the status of energy resiliency by measuring the ability of an organization or facility to prepare, withstand, and recover from disruptions due to natural or human-induced hazards. This scorecard will be used to monitor the progress of an energy facility in terms of energy resilience over a period, and not as a tool for auditing. Moreover, the benefit of the ERS goes beyond the outcomes as it can also be considered as basis of financial institutions (FIs) for funding and investment as well as insurance, among others. This project, which aims to be the first metric or index being developed specific to the resilience of energy infrastructures, is being undertaken by the DOE-TFER Secretariat in partnership with the USAID-ESP.

Figure 22. ERS Development Timeline of Activities



The development of the ERS will be based on a rigorous process to ensure its responsiveness, appropriateness, and adequacy to the resiliency needs of the energy sector. The pillars and key areas of the ERS were determined based on existing scorecard and framework, such as the: 1) United Nations Disaster Risk Reduction's (UNDRR) 10 Essentials for Making Cities Resilient; 2) Integrated Resource and Resilience Planning (IRRP) Framework; and, 3) the DOE-RCP Categories from the Energy Resiliency Policy. To finalize and test the content comprehensiveness, appropriateness and practicality of the scorecard, there will be a series of key activities and the program will be conducted in three (3) phases in order of priority (Figure 22).

For Phases I and II, the DOE in partnership with USAID-ESP conducted a workshop for DUs in February 2023, which consulted the private DUs and ECs. The consultation with the power generation companies, NGCP and National Transmission Company (Transco), and the National Power Corporation-Small Power Utilities Group (NPC-SPUG) subsequently followed in April. Consultations with the off-grid power facilities and oil and gas industry facilities are scheduled in 2024.

The next key activities include: 1) the recalibration of the indicative measurement scale, the scoring system, and references linked to the RCP; 2) pilot testing of selected energy companies in Luzon, Visayas, and Mindanao; 3) final consultation and adoption of the ERS; and, 5) evaluation of RCP submissions based on the ERS.

**\* Outcome 5: Incorporated and adopted energy resiliency planning and programming by the energy sector industry participants and stakeholders**

**IECs, Orientation and Guidebook on RCP and ERS.** The DOE aims to increase compliance with the RCP submission and ERS self-assessment to improve the baseline data on energy resiliency. As such, the DOE shall conduct a series of IEC Campaigns and orientations on how to accomplish the updated RCP template and the ERS in order to boost compliance of the energy stakeholders on the RCP submission and use of the ERS as self-assessment tool. Moreover, a self-learning module on the RCP and ERS shall be developed as a reference in accomplishing the RCP and ERS.

Compliance monitoring and validation of RCP submissions together with the ERS shall be periodically conducted by a Resiliency Field Assessment Team (RFAT) composed of the DOE and concerned TFER member agencies.

**\* Outcome 6: Organized collection, retrieval, processing, and data management of energy resilience-related data and information.**

**\* Outcome 7: Incorporated disaster prevention and mitigation strategies and measures based on science and risk-based information to reduce risks and vulnerabilities.**

**Energy Disaster Information Management System (EDIMS).** The availability of accurate information and its smooth flow is one of the most important aspects of disaster risk management. The timely reporting of relevant information enables key decision-makers and emergency responders to efficiently direct emergency responses, which is crucial for the preservation and protection of life. With this, the DOE included the development of EDIMS in the Information Systems Strategic Plan (ISSP) 2024-2026 in line with Sections 7.1.2 and 7.1.11 of the DC2022-06-0028 (Supplemental ERP). The EDIMS is a unified web platform consisting of two integrated modules:

- **Energy Sector Hazard Exposure Data and Map** – This module is composed of an integrated platform with a centralized, comprehensive, and unified database of energy infrastructures from the power and oil sectors overlaid to different hazard exposure data and converted into maps of the energy facilities. This can be used for vulnerability and risk assessment and contingency planning.
- **TFER Disaster Information Monitoring Dashboard** – This module is an integration of a datasharing platform for real-time monitoring of the status of the power and oil supply situation before, during and after a disaster. This requires a harmonized reporting template to include a database and statistics on damages and effects of disasters on the energy facilities and has the capability to produce an online disaster information dashboard and reports.

The key activities cover a Technical Needs Analysis of the design of the platform, collaboration with the Department of Science and Technology-Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS) for the hazard exposure mapping, and undertaking of a Memorandum of Agreement (MOA) with the different energy stakeholders for the data sharing and privacy concerns.

**Energy Resiliency Management System (ERMS).** The ERMS is a web-based system to collect, consolidate, store, and monitor the RCP submissions of the energy stakeholders and participants. Additionally, part of this system would be an online version of the ERS. Said system shall improve the efficiency of the RCP monitoring and submission by providing an online system and repository. On the other hand, the ERS provides the status of the resilience of the energy sector facilities, which can be monitored by the energy companies through a secured account.

**\* Outcome 8: Increased structural integrity and resilience of power system and oil and gas supply chain and infrastructures to withstand or minimize adverse effects of climate change, hazards, and disruptive events.**

**\* Outcome 15: Developed and adapted to evolving resiliency standards for energy facilities and systems to ensure timely recovery and minimal damage and losses through reconstruction and rehabilitation of energy infrastructures aligned with the “Build Back Better” principle.**





**Improving Energy Resiliency Standards.** Improving Energy Resiliency Standards, as indicated in Section 2.1 of the Supplemental ERP, will play a critical role in disaster prevention and mitigation, as well as disaster rehabilitation and recovery. Upgrading the existing standards on resiliency will help withstand or minimize the impacts of disasters on energy facilities, and therefore essential for the swift restoration of energy services following a disruption. This aims on shorter or minimal interruptions of power services and disruption in the oil and gas supply chain.

Based on recent disaster events, the damage to energy facilities from strong typhoons has been an annual and cyclic occurrence wherein most of the ECs are only able to build back facilities for the sake of restoring power services. Hence, the top priority is to improve the energy resiliency standards of the ECs and incorporating the principle of “Build Back Better”, where post-disaster reconstruction shall not only be restored to its pre-disaster condition but incorporate a higher level of resiliency standards, as well as climate change and mitigation measures in all post-disaster rehabilitation and recovery interventions.<sup>16</sup>

**Energy Resilient Systems for Critical Infrastructures for On-Grid and Off-Grid Areas: Islanding and Micro-Grid System Design.** Developing energy resilient systems for critical infrastructures both on-grid and off-grid areas will be a key priority of the DOE as part of its goal to minimize disruptions of the economic sectors. For on-grid areas, the DOE will study the microgrid development that can isolate from the main power network and operate autonomously or implement islanding capability in case the main transmission highway gets affected by a disaster or disruptive event. This project includes establishing standards and regulations for the design, installation, and operation of islanded and microgrid systems. The microgrid or islanding capability aims to provide immediate power supply to essential services like hospitals, telecommunications, water supply, military and police camps and emergency response. In off-grid areas, the DOE plans to utilize standalone power system, such as solar-plus-storage systems to energize critical infrastructures<sup>17</sup>. The DOE also seeks to promote renewables in power system designs to reduce emissions and increase the resilience and sustainability of these off-grid power systems.

The DOE's strategy involves a holistic and collaborative approach with relevant agencies to review and resolve regulatory, financial, and technical barriers. With proper implementation, energy-resilient systems can help address the nation's critical infrastructure gaps, satisfy basic energy needs in remote regions, and strengthen overall resilience to shocks and stresses. The DOE, in collaboration with concerned stakeholders, will then provide guidelines, financing mechanisms, and technical assistance to stakeholders in accordance with RA 11646 or the Microgrid Systems Act to successfully implement these needed energy-resilient measures and solutions.

**\* Outcome 9: Formulated comprehensive, flexible, and effective policies aimed to promote energy resiliency investment and increased financial response capacity of energy companies to recover from the effects of natural and human-induced disasters.**

**Energy Resiliency Investments.** Investing in adaptation and mitigation strategies not only enhances the sector's resilience but also fosters sustainable practices and reduces carbon emissions. However, these initiatives must secure the necessary funding for adaptation and mitigation plans. There are various funding mechanisms that can be deployed like the Public-Private Partnerships and other innovative financing platforms to bring together government agencies, energy stakeholders, and development partners to pool resources and expertise. These mechanisms attract private investment into sustainable energy projects, alleviating the burden on consumers, while propelling the transition towards a low-carbon future.

In alignment with these goals, the DOE will be working closely with the Climate Change Commission (CCC) to access viable international climate finance available, such as but not limited to the Green Climate Fund (GCF), Global Environment Facility (GEF), Adaptation Fund (AF), Climate Technology Center and Network (CTCN) and the Loss and Damage Fund (LDF) in order to direct and fund investments related to energy resiliency.

<sup>16</sup> World Bank Group, *Ready to Rebuild: Disaster Rehabilitation and Recovery Planning Guide Workbook*, 2022, Washington, D.C., 14.

<sup>17</sup> National Renewable Energy Laboratory, *Solar-Plus-Storage Analysis*, <https://www.nrel.gov/solar/market-research-analysis/solar-plus-storageanalysis.html>.



**Disaster Risk Financing and Insurance.** Among the extensive effects of hazards is the substantial financial loss incurred by the energy industry. Therefore, Disaster Risk Financing and Insurance (DRFI) has emerged as one of the innovative approaches to minimize the financial impacts of different hazards, protecting our energy infrastructure and systems from potential disruptions, as well as cushioning the rate impact to consumers. Based on the World Bank Organization, DRFI aims to increase the resilience of vulnerable countries against the financial impact of disasters and to secure access to post-disaster financing before an event strikes, thus ensuring rapid, cost-effective resources to finance recovery and reconstruction efforts.<sup>18</sup>

The current situation of the DRFI in the energy sector is characterized by a growing recognition of its importance, but with room for further development. While some energy companies have started exploring and implementing the DRFI strategies, the overall adoption and integration of such in the sector remain relatively low. Limited awareness, inadequate understanding of the DRFI benefits, and challenges in accessing appropriate insurance products are some of the key factors hindering widespread implementation.

To further advance the DRFI for the energy sector, the DOE plans to develop a strategic plan and comprehensive policies and programs. Its primary objective is to establish robust mechanisms and guidelines that effectively enhance the DRFI practices within the sector. Additionally, these policies and programs aim to ensure accessible funding sources necessary for promoting resilience, while incorporating measures to prevent any potential misuse or abuse of these financial sources.

Development and implementing mechanisms, such as criteria or tools to properly assess energy resiliency can encourage investment and insurance of energy resiliency projects. The RCP and ERS may be able to provide an evidence-based guide to financing investments and securing the DRFI. Potential applications of ERS in innovative financing will continue to be explored in the next five (5) years.<sup>19</sup>

## 2. Disaster Preparedness

- \* **Outcome 10: Developed and improved preparedness measures, and operational and coordination mechanisms, as well as strengthened organizational capacities and practices to mitigate disaster effects and ensure expeditious restoration of energy supply during and in the aftermath of disruptive events.**

**National Energy Contingency Plan (NECP) for "The Big One".** One of the impending threats to our national security is the occurrence of a strong earthquake, particularly a Magnitude 7.2 Earthquake generated by the movement of the West Valley Fault (WVF) affecting the Greater Metro Manila Area (GMMA) to include parts of Region III (Central Luzon) and Region IV-A (CALABARZON).

Based on the Metro Manila Earthquake Impact Reduction Study (MMEIRS) in 2004, the worst-case scenario would lead to substantial economic loss and severe damages to lives and properties due to the effects of the violent ground shaking such as fire/explosions, landslides, ground rupture, and liquefaction, among others. The energy sector facilities within GMMA would also suffer from severe damages and wide-service interruptions, such as the tripping and toppling of transmission and distribution infrastructures resulting in Total blackout of the Luzon Grid, as well as fire and explosion from LPG refilling plants and gasoline stations which may contribute to even massive casualties.<sup>20</sup>

The DOE in partnership with the Philippine Disaster Resilience Foundation, Inc. (PDRF) and the Program Management Office for Earthquake Resiliency of the Greater Metro Manila Area (PMO-ERG), formally launched the National Energy Contingency Plan (NECP) for **The Big One: A Magnitude 7.2 Earthquake Scenario in GMMA** on 14 December 2022. The contingency plan contains a harmonized multi-sectoral contingency plan and coordinated disaster response and early recovery measures from various energy stakeholders, security agencies and other government agencies.



Official Launching of the National Energy Contingency Plan for "The Big One" in GMMA

<sup>18</sup> The World Bank, *Disaster Risk Finance: A Primer – Core Principles and Operational Framework*, 2018.

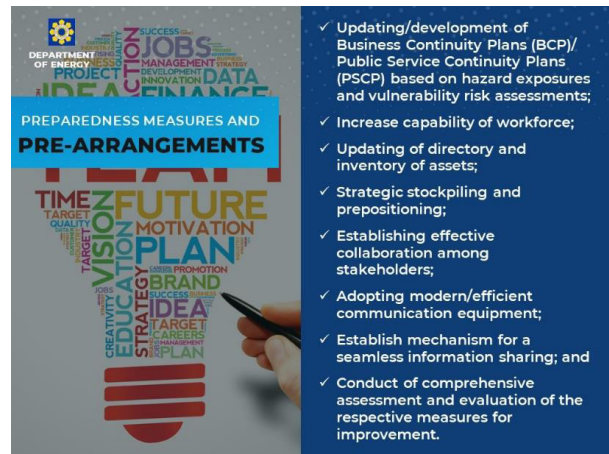
<sup>19</sup> Asia-Pacific Economic Corporation, *APEC Energy Resiliency Guidelines*, 2023, 14–15.

<sup>20</sup> Department of Energy, *National Energy Contingency Plan for "The Big One"*, 2023.

Figure 23. NECP for “The Big One” Preparedness Measures and Pre-Arrangements

The DC 2023-01-0002 or “Adoption of the National Energy Contingency Plan for ‘The Big One’” was also issued on 11 January 2023 to institutionalize the implementation of a harmonized contingency plan throughout the energy sector.<sup>21</sup> It also establishes the Technical Working Group on Energy Sector Earthquake Resiliency (TWG-ESER) with an oversight function in the adoption and implementation of this plan. Among its functions is the supervision of the implementation of disaster response, pre-arrangements, and other coordination mechanisms by the energy sector (Figure 23).

By virtue of this DC, the DOE, and its attached agencies shall develop contingency plans consistent with the NECP. Further, the energy stakeholders susceptible to the effects of “The Big One” from the WVF shall likewise integrate the response arrangements indicated in the NECP into their Business Continuity Plans (BCPs) or other contingency plans.



**National Oil and Gas Contingency Plan (NOGCP).** Being a net importer of oil products, the country is vulnerable to oil supply volatility and demand dynamics in the international market leading to domestic pump price hikes and consequently affecting commodity prices. Moreover, extreme weather events also affect the local supply and pump prices. During the aftermath of Typhoon Odette, the TFER encountered fuel supply insufficiencies for Diesel Power Plants (DPPs) due to damaged seaports. There were also price spikes and temporary supply shortages in petroleum products in disaster-stricken areas due to hoarding and demand escalation.



One of DOE’s key priorities for 2023 is to pursue contingency measures and activities to ensure energy supply during critical periods. In lieu of this, the development of a National Oil and Gas Contingency Plan (NOGCP) is underway to establish coordinated and harmonized response measures and prearrangements of the oil and gas industry together with the concerned government agencies in the event of external and internal supply disruptions based on the identified hazards and vulnerabilities in the sector.

To kickstart the formulation of the NOGCP, the DOE, in partnership with the PDRF, conducted a threeday scoping workshop on 29–31 March 2023. From the outputs of the scoping workshop, the plan will be finalized after a series of writeshops, consultations, and focused group discussions (FGDs) with the industry stakeholders. The final output is targeted to be published and launched together with a DC for its adoption by the 3<sup>rd</sup> Quarter of 2024.

**National Power Contingency Plan (NPCP).** In view of the power crisis in the late 80s and early 90s and the Luzon-wide blackout in 2001, the DOE, together with the NPC, Transco and the private sector formulated the 2002 Power Contingency Plan (PCP), to ensure the reliable supply of electricity thereby sustaining economic activities in the country and minimizing any negative effects of system-wide outages or power deficiencies.

With the advent of new and emerging threats, there is a need to update and develop a robust NPCP that will enhance power sector resilience, safeguard energy infrastructure, ensure a reliable supply of electricity, and promote sustainable development in the face of evolving challenges in the energy sector. The NPCP will likewise include a comprehensive framework that outlines strategies, procedures, and measures to mitigate potential power disruptions, enhance energy security, and build resilience in the power sector infrastructure and systems. The NPCP will highlight the importance of hazard and risk assessment, preparedness, coordinated response, strategic stockpiling, modernizing of electric facilities and system and capacity building.

<sup>21</sup>Department Circular No. DC2023-01-0002 titled “Adoption of the National Energy Contingency Plan for ‘The Big One’”.

**\* Outcome 11: Equipped and trained workforce to ensure continuous and quality public service and/or business continuity.**

**Energy Sector Capacity Building.** The DOE is steadfast in its commitment to enhancing the capabilities of individuals, organizations, and institutions within the sector. This is achieved through a comprehensive approach that focuses on developing and refining the necessary skills, knowledge, and expertise required to drive the sector forward. By investing in capacity-building programs and training initiatives, the energy sector aims to increase the pool of professionals on energy resiliency by equipping them the right and necessary tools and resources to tackle complex challenges, ready for uncertainties and stay abreast of technological advancements.

In line with the resiliency initiatives of the energy sector, several capacity-building activities have been identified to support and promote its preparedness efforts. These activities are aimed to be included in the program of the DOE-TFER and member agencies for the next five years. The identified capacitybuilding activities encompass a range of focus areas and objectives, aiming to enhance the skills, knowledge, and capabilities of individuals and organizations within the energy sector.

**\* Outcome 12: Established and strengthened partnerships with concerned international organizations, government agencies, energy industry participants, academe, NGOs including development partners, to adopt and implement the energy resiliency policies, plans, programs and protocols.**

**DOE membership in the APEC Energy Resiliency Task Force (ERTF).** Collaborative efforts among various stakeholders, including international organizations, government agencies, non-governmental organizations (NGOs), and the private sector are essential to effectively address the multifaceted challenges caused by disasters.

In line with this, the DOE serves as the co-chair (with the United States) of the Asia-Pacific Economic Cooperation – Energy Resiliency Task Force (APEC-ERTF) as a venue to facilitate discussions on energy resiliency. With the issued APEC Energy Resiliency Guidelines in February 2023, APEC member economies are guided to build energy systems resilient against both natural and human-induced disasters.<sup>22</sup> The DOE regularly shares the resiliency innovations of the Philippine energy sector and likewise benefits from the initiatives of the member economies.

**NDRRMC Disaster Preparedness Pillar TWG on Energy Resilience Policy.** In the performance of its mandate, the TFER, during the Typhoon Odette Disaster, has encountered several issues and concerns, particularly in Disaster Response and Early Recovery. Hence, DOE-TFER advocated for the creation of a TWG under the Disaster Preparedness Thematic Pillar (DPP) that will craft policy recommendations on the institutional arrangements of the energy sector for early preparedness and during disaster response/emergencies. As a recent development, the NDRRMC signed the NDRRMC DPP Resolution No. 5, Series of 2022 creating the TWG on Energy Resilience Policy headed by the DOE. Subsequently, the Terms of Reference (TOR) was approved by the DPP member agencies on 24 May 2023. Through this TWG, the energy sector shall have the avenue to coordinate with other concerned government agencies outside of the energy sector to suggest policy recommendations for a more coordinated and seamless disaster response to immediately restore power and ensure sufficient petroleum products in disaster-stricken areas.

### 3. Disaster Response and Early Recovery

**\* Outcome 13: Implemented damage assessments and provided reliable and risk-based information for the expeditious restoration of energy supply after a disaster or disruptive event.**

**Emergency Operation Center (EOC).** The DOE aims to upgrade its disaster response operation and mechanism by establishing a physical Energy Sector Command Center/Emergency Operations Center (ESCoC/ESEOC) at the DOE Main Office and Field Offices for the enhancement of its decision-making, convergence, coordination, and monitoring of activities, as well as information sharing between and among agencies and other stakeholders.<sup>23</sup> This project will be made possible through partnership with the PDRF with grant from the USAID-ESP.

<sup>22</sup> Asia-Pacific Economic Corporation, *APEC Energy Resiliency Guidelines*, 2023, 5.

<sup>23</sup> Department Circular No. DC2022-06-0028, titled "Supplementing Department Circular No. DC2018-01-0001 on the Energy Resiliency Planning and Programming of the Energy Sector and on Task Force on Energy Resiliency (TFER) Functions and Structure to Mitigate Impacts of Disasters", sec. 7 (7.10).





This ESEOC will feature modern Information and Communications Technology (ICT) equipment for the real-time monitoring of the effects of disasters together with the updated hazard maps and dashboards of the energy facilities through the EDIMS platform. This will also serve as the hub for coordination and information sharing of TFER members during briefings and preparedness meetings, media briefings, among others. Capacity-building activities will also be regularly conducted to capacitate the workforce on how to operate the ESEOC.

**\* Outcome 14: Developed and implemented a harmonized response plan, protocol, and manual of operations of the energy sector to immediately restore power supply and ensure sufficient supply of oil and gas in disaster-stricken areas.**

**Deployment Plan of Task Force ‘Kapatid’ (TFK) for the Distribution Utilities.** Following the adoption of the NECP for “The Big One,” one of the pre-arrangements is the development of a Deployment Plan for assisting the ECs through the TFK in response to the expected damages be incurred after a disaster. As a way forward, the TKP-Deployment Plan will target increasing membership from other private DUs, as well as the improvement of protocols and procedures, and strategic planning for the prepositioning of critical assets and equipment to ensure that continuous power restoration can be undertaken. The DOE, with the assistance of the NEA and other concerned DUs, shall study the establishment of regional asset hubs wherein different ECs and private DUs can store their emergency response and power restoration equipment.

**Creation of Task Force ‘Kadugo’ for the Oil and Gas Sector.** The downstream oil and gas sector, in the spirit of “Kapatiran,” has been implementing the practice of mutual assistance to nearby companies that are in need, especially during disasters. As evidenced by the effectiveness and efficiency of the TFK by the DUs, this sector aims to create response protocols and arrangements for the deployment of a Task Force ‘Kadugo’ for the same purposes of expeditious emergency response and restoration of downstream oil and gas facilities/supply chain in the event of a disaster. This will further outline and coordinate the responses of the oil and gas industry stakeholders that will be involved in a more efficient emergency response.

**Fuel Allocation and Rationing Implementation Plan.** Due to the dependency on oil supply importation, the country is also vulnerable to both external supply disruptions and instabilities caused by geopolitical issues, and supply and demand shifts, as well as internal supply disruptions caused by natural and human-induced hazards. Hence, one of the preparedness measures of the government through the DOE is to create a Fuel Allocation and Rationing Implementation Plan in preparation for a potential major oil supply disruption scenario. This will be extensively discussed in the NOGCP for internal and external disruptions that will be formulated by the DOE-TFER in partnership with concerned stakeholders.

## 4. Disaster Rehabilitation and Recovery

**\* Outcome 16: Developed and implemented rehabilitation and recovery plans and programs for damaged energy facilities aligned with the “Build Back Better” principle.**

**Rehabilitation and Recovery Investment Plan (RRIP).** Based on the World Bank Group, early adaptation and proactive resilience-building actions have been proven to be cost-effective, compared to waiting to address the severe impacts of natural and human-induced disasters, which can lead to higher costs and greater risks. One of the priorities of the NCCAP 2011-2028 is the climate-proofing and rehabilitation, and improvement of energy systems infrastructure.<sup>24</sup>

<sup>24</sup> Climate Change Commission, *National Climate Change Action Plan 2011-2028*, 2011, 26.



However, one of the primary obstacles in rehabilitation and recovery efforts is the high cost associated with infrastructure upgrades and improvements. Rehabilitating aging energy infrastructure, and implementing resilient technologies require substantial financial investments that may surpass the available resources of governments and industry players. Similarly, the limited availability of funding sources dedicated to energy rehabilitation and recovery poses a stumbling block.

By investing in rehabilitation and recovery efforts with the "Build Back Better" principle in mind, we can enhance the resiliency of energy infrastructure and systems. This approach goes beyond addressing immediate needs in power restoration and focuses on creating a foundation for more resilient, sustainable, and disaster-proof energy infrastructures and systems. Thus, establishing the mechanisms for the RRIP will be explored in the next five years together with the relevant agencies.

**\* Outcome 17: Improved regulatory support on cost recovery mechanisms and energy resiliency investments.**

**Review of Regulatory Policies and Guidelines on Cost Recovery Mechanisms.** The rehabilitation and recovery of damaged energy infrastructure in the country demands significant costs for repairs and restorations. The ERC shared the major challenges for Capital Expenditure (CAPEX) applications related to Force Majeure Events (FME). From 2008 to 2023, the ERC received a total of 103 FME-related CAPEX applications, 73 of which are from the DUs, and the remaining 30 are from the NGCP, with proposed costs amounting to Php10.14 billion. Notably, the DUs and NGCP facilities from the Visayas region have the largest share of CAPEX applications for FME due to the impact of Super Typhoon Yolanda and Odette<sup>25</sup> (Figure 24).

Figure 24. Summary of CAPEX Applications filed from 2008 to 2023

| FME CAPEX Applications                                      |            |  |                          |
|---|------------|--|--------------------------|
| Total Number of FME CAPEX Applications Filed from 2008-2023 |            | Total Proposed Cost of FME CAPEX Applications from 2008-2023 |                          |
| <b>Distribution Utility</b>                                 | <b>73</b>  | <b>Distribution Utility</b>                                  | <b>6,001,562,448.27</b>  |
| • Luzon   | 39         | • Luzon  | 1,631,850,703.20         |
| • Visayas   | 20         | • Visayas  | 3,278,558,104.72         |
| • Mindanao  | 14         | • Mindanao   | 1,091,153,640.35         |
| <b>NGCP</b>   | <b>30</b>  | <b>NGCP</b>  | <b>4,141,385,364.50</b>  |
| <b>Total</b>  | <b>103</b> | <b>Total</b>   | <b>10,143,247,812.77</b> |

However, this does not reflect the whole picture of FME-related costs. Several DUs, especially ECs, encounter challenges in meeting the filing deadline of four months or 120 days from the occurrence of the FME to submit their CAPEX application due to difficulties in accurately accounting for the actual expenditures during the rehabilitation period. The DUs also face challenges in complying with the filing of approval for construction of facilities within 60 days from the implementation of the project as it reduces the filing period to 60 days for emergency or extraordinary cases pursuant to Section 20 (b) of R.A. 11659 or the Public Service Act.<sup>26</sup>

To assist the stakeholders, the ERC has provided templates and conducted regulatory education to guide the DUs in preparing their CAPEX applications. However, the concern regarding the inclusion of unrelated expenses in the application remains an issue. Out of the 121 ECs, only 13.2 percent, or 16 ECs were able to include their buffer stock requirements in the multi-year CAPEX filing as part of the resiliency programs. To address these challenges, the ERC is currently reviewing to amend its CAPEX rules to provide proper guidance to the DUs in preparing their multi-year CAPEX filings. The filing shall incorporate resiliency programs, including the provision of sufficient inventory of buffer material pursuant to the NEA Memorandum No. 2015-023. The ERC is also working with the NEA regarding the utilization of the Enhanced Integrated Computerized Planning Model (eICPM) to facilitate the filing and approval of the ECs' CAPEX application. In conjunction with these efforts, the ERC, in collaboration with the DOE and relevant stakeholders, shall thoroughly review the regulatory policies related to CAPEX application and develop an efficient cost recovery mechanism.

## B. Major Outputs for the Security of Energy Infrastructures and Systems

Energy security lies at the heart of the country's socio-economic stability, progress, and sovereignty. It encompasses a broad spectrum of interrelated factors, such as energy supply diversity, infrastructure resilience, market efficiency, environmental sustainability, and the ability to respond to all energy-related threats, both natural and human-induced.

<sup>25</sup> Energy Regulatory Commission, *Challenges and Best Practices on CAPEX Applications for Force Majeure*, 2022.

<sup>26</sup> Republic Act No. 11659 titled "An Act Amending Commonwealth Act No. 146, Otherwise Known as the Public Service Act, as Amended".

The collaborative efforts of the DOE, policymakers, industry stakeholders, and civil society are crucial in shaping a coherent and forward-looking energy strategy that safeguards the nation's future. By focusing on fortifying the security parameters of critical energy infrastructures, adhering to high-quality security standards and protocols, creating mitigating efforts for present vulnerabilities and emerging threats, and collaborating in harmonized emergency responses to effectively react in case of emergencies and disasters. Embracing these focused actions, the country can forge a path toward a secure, resilient, and sustainable energy future.

**\* Outcome 18: Increased coordination and cooperation of international, national, regional security agencies and other concerned entities to strengthen the security & protection of energy resources, infrastructures & systems.**

## **1. Responding to Global and Regional Geopolitical Issues to Increase Energy Security**

The Philippines' energy security is intricately tied to a complex web of global and regional geopolitical issues, demanding a comprehensive approach to energy securitization. These issues have profound implications for the country's energy landscape, requiring continuous efforts and initiating developments on relevant approaches to energy security.

### ***Global Challenge: Intensifying conflict in Europe between Ukraine and Russia and other parts of the World***

At the global level, ongoing geopolitical tensions between Russia and Ukraine continue to pose significant challenges to energy security. The conflict between the two nations has had repercussions on the stability of natural gas supplies to Europe. Recent developments, such as the completion of the Nord Stream 2 pipeline connecting Russia directly to Germany, have sparked concerns about the potential for reduced gas transit through Ukraine. This situation highlights the vulnerability of energydependent nations, including the Philippines, to disruptions in global energy flows. As a result, the country must prioritize efforts to diversify energy sources, enhance energy efficiency, and develop resilient energy infrastructures to mitigate potential risks.

- **Support Diplomatic Efforts.** The DOE can support diplomatic peace efforts by working closely with the Department of Foreign Affairs (DFA) in providing support to ensure that the energy sector is well-represented in international dialogues. By collaborating with the DFA, the DOE can contribute its technical expertise, data, and policy recommendations to inform and shape the country's energy interests and priorities during diplomatic discussions. This collaboration allows the DOE to provide valuable insights and information on energy-related matters, enabling the country to effectively advocate for its energy sector in the international arena. By aligning efforts and sharing knowledge, the DOE and the DFA can work together to ensure that the energy sector's perspectives and concerns are considered and integrated into diplomatic peace efforts, reducing the risk of energy disruptions caused by geopolitical conflicts.

### ***Regional Challenge: The West Philippine Sea Dispute***

The West Philippine Sea (WPS) dispute remains a critical geopolitical challenge directly threatening the country's energy security. Conflicting territorial claims in the region, particularly between China and multiple Southeast Asian nations, including the Philippines, have raised concerns about access to the area's valuable oil and gas reserves. Recent developments in the WPS have seen increased militarization and assertive actions by certain countries, further exacerbating tensions. These actions have implications for the country's exploration and development activities of these resources. The DOE together with the National Task Force for the West Philippine Sea (NTF-WPS) are actively engaging in diplomatic efforts, upholding international law, and promoting multilateral cooperation to safeguard its energy interests in the region.

There are several strategies that can be adopted that align with the ongoing efforts of the NTF-WPS and broader government initiatives. The DOE in collaboration with other government agencies shall support these strategies including the resumption of exploration activities to assert the country's rights within the framework of international law and engaging in regional energy cooperation.



## 2. Increasing Security of Energy Infrastructures and Systems against Internal Armed Conflicts, Sabotage and Terrorism

To combat internal armed conflicts, sabotage, and terrorism in the country and ensure energy security, a comprehensive and coordinated approach is necessary. Here are relevant strategies and measures, including the efforts of specific national action plans, to address these challenges:

- **Enhancing Critical Infrastructure Protection.** The bombing of transmission lines is a concerning issue that poses a significant threat to the country's power supply. These acts of violence also endanger lives and cause inconvenience to communities. One incident illustrating this issue is the bombing of the NGCP transmission lines in Kauswagan, Lanao del Norte. On 25 October 2022, the NGCP tower No. 8 in Kauswagan was targeted, resulting in the toppling of the tower and the tripping of the Baloi-Aurora 138kV Transmission Line, which led to the power outages and manual load dropping in several areas in Mindanao.

The National Action Plan on Critical Infrastructure Protection (NAP-CIP) is an initiative from the Anti-Terrorism Council-Program Management Center (ATC-PMC) that plays a vital role in enhancing the country's preparedness against terrorist attacks on critical infrastructure and soft targets by instituting some measures by all stakeholders. The energy sector is one of the 14 critical infrastructures that needs to enhance security and build resilience by identifying the priority action activities in line with ATC-PMC's framework, namely: 1) Prevent, 2) Protect, 3) Prepare and 4) Respond.

Protecting these key energy assets from terrorist threats is crucial to build resilience, ensure uninterrupted energy supply, and maintain national security. The DOE targets the development of harmonized energy sector inputs to the NAP-CIP in the 4th Quarter of 2023. A multi-layered approach will be established within the energy sector and government stakeholders, which includes risk assessments, implementing security protocols and cybersecurity measures, intelligence sharing, incident response planning and sharing, and adopting of best practices from successful initiatives.

- **Development of Comprehensive Digital Mapping of Critical Energy Facilities.** The DOE is actively acting in securing critical energy facilities by crafting a comprehensive policy, currently being drafted, that centers around mapping submarine, inter-island overhead and underground oil and gas pipelines, as well as power line facilities, to safeguard their safety and security. Through the consolidation of information and regular updates to digital maps, the DOE can effectively shield these crucial energy-related installations from potential disruptions. By ensuring compliance with industry standards and regulations, the policy enhances accountability, reduces economic losses, and facilitates efficient operations. Further, the creation of this confidential map and close coordination with relevant agencies bolster the DOE's overall efforts in mitigating threats that could potentially disrupt the supply of power and fuels, thus safeguarding the stability and reliability of the country's energy infrastructures.
- **Development of the Energy Sector Cybersecurity Program.** As the energy sector, particularly the electric power industry, moves toward a more technological system or a "SMART Grid," there will be an increased dependence on ICT. Section 2.27 of DC 2020-02-0003 or "Providing a National Smart Grid Policy Framework for the Philippine Electric Power Industry and Roadmap for Distribution Utilities" paves the way for the integration of these new technologies into their infrastructures which increase vulnerability to cyberattacks. To address this gap, Section 5.7 of the same DC also mandates the electric power industry to develop a cybersecurity infrastructure that is compliant with global standards.

### ***Building the Energy Sector Cybersecurity Program***

To institutionalize and efficiently implement the cybersecurity resilience program of the energy sector, the DOE shall formulate an '*Energy Sector Cybersecurity Policy*' and its roadmap to comply with the National Cybersecurity Plan (NCSP) 2023-2028. This policy will cover the organizational assessment and implementation of strategies to protect the ICT Pillars of identified critical infrastructures, such as the People, Process, and Technology (PPT). Some of the targeted deliverables are the creation of the Energy Sector Computer Emergency Response Team (ES-CERT) and its Security Operations Center (SOC), and the development of the following: 1) Cybersecurity Resilience Scorecard; 2) Customized Cybersecurity Standards; 3) Information and Operational

Technologies Cybersecurity Risk Assessment Framework; 4) Cybersecurity Business Impact Analysis Framework; 5) Incident Response Plan; and, 6) Capacity Building Program. One major output underway is the finalization of the Philippine Electric Supply Chain (PESC) Cybersecurity Assessment Framework (CAF), which adopts the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF) for Improving Critical Infrastructure Cybersecurity indicated in the NCSP 2017- 2022<sup>27</sup> and further reflected in the NCSP 2023-2028 (Figure 25).

Figure 25. NIST Cybersecurity Framework



### Enhancing the DOE Cybersecurity Capability

The DOE will devise and implement a comprehensive 'DOE Cybersecurity Plan' that shall cover the key areas for cybersecurity identified under the NCSP 2023-2028, namely: Information Security, Application Security, Network Security, Internet Security, and Critical Information Infrastructure Protection.<sup>28</sup> The DOE shall acquire cybersecurity-related certifications covering Corporate Governance of Information Technology, Information Security Management System, Risk Management, and Internet of Things.

The DOE has established its network linkages with the DICT through the Cybersecurity Management Systems Project (CMSP), which is a platform consisting of security tools and technologies to assist the Philippine National Computer Emergency Response Team (PH-CERT) in responding to cyber incidents and attacks. The following deliverables were achieved as part of the collaborative work between the DOE and DICT under the CMSP:

- The DICT deployed the security tools and technologies (software and hardware) within the DOE, which monitors incoming and outgoing traffic; and,
- The DOE receives advisories from the PH-CERT on cybersecurity threats.

The DOE personnel shall also undergo rigorous capacity-building activities to build its cybersecurity experience and expertise.

**\* Outcome 19: Increased preparedness measures, organized monitoring, and coordinated response actions for the conduct of the elections.**

### 3. Conduct of the National & Local Elections (NLE) and Synchronized Barangay and Sangguniang Kabataan Elections (BSKE)

Electrical power disruptions during the national and local elections in the country critically threaten not only the integrity of the democratic process but also the country's energy security. These "unexpected outages," which coincidentally occur during essential voting and vote tallying periods, could potentially serve as a medium for manipulating election outcomes. With this, a comprehensive approach that ensures robust energy security is essential in preserving the transparency and fairness of the electoral process while reinforcing the nation's resilience against power disruptions. The Energy Task Force Elections (ETFE), created through DC2018-05-0014, plays a crucial role in mitigating these disruptions. Since 2018, the ETFE has been boosting its preparations and implementing strategies and measures to combat power disruption during elections through: 1) Harmonizing Communication and Coordination; 2) Conducting Power Infrastructure Inspections; 3) Implementing Back-up Power Solutions; 3) Strengthening Monitoring and Rapid Response Systems; and, 5) Consolidating the Security Plans of agencies. The ETFE shall continue to enhance its protocols in support of reliable and peaceful conduct of elections.

<sup>27</sup> Department of Information and Communications Technology, The National Cybersecurity Plan (NCSP) 2023-2028, 2023, 20.

<sup>28</sup> Department of Information and Communications Technology, The National Cybersecurity Plan (NCSP) 2023-2028, 2023, 25-28.



## D. COLLABORATION WITH THE ATTACHED AGENCIES

### I. Philippine National Oil Company



The Philippine National Oil Company (PNOC) was created on 09 November 1973 to ensure an adequate supply of oil and oil products in response to the global energy crisis that affected the country in the early 1970s.

Since then, the PNOC has undergone amendments to its charter that included the exploration, exploitation, and development of all energy resources in the country, as well as the acquisition of refineries and petroleum transport and marketing firms which include Esso Philippines<sup>29</sup> and Petron<sup>30</sup>.

As a holding company, the PNOC created 24 subsidiaries to fulfill its mandates, which were later privatized or abolished. As the parent company, the PNOC continues to exercise oversight over the programs and projects of its remaining subsidiaries, namely the PNOC-Exploration Corporation (PNOC EC) and the PNOC-Renewables Corporation (PNOC RC). Financial assistance, if necessary, is likewise provided. Its reorganization into an operating company was authorized by the Governance Commission for GOCCs (GCG) in September 2014.

In 2022 alone, the PNOC generated a net income of PhP3.36 billion, which includes the PhP5.24 million gained by the company from the sale of properties located in Batangas, Laguna, Tarlac, Bulacan and Bataan.

Currently, the PNOC's priorities include the management of its real estate assets and banked gas, as well as the efficient operation of its 19.2-hectare Energy Supply Base (ESB) in Mabini, Batangas, and the 530-hectare PNOC Industrial Park in Limay and Mariveles, Bataan. The PNOC is also involved in research for the development of various energy-related infrastructure projects aimed at achieving energy security and stability.



Following the entry into a Gas Sales Purchase Agreement (GSPA) with two (2) subsidiaries of FirstGen (First NatGas Power Corporation and Prime Meridian PowerGen Corporation) in December 2021, the PNOC signed another GSPA with South Premiere Power Corporation in June 2022. Relatedly, a total of 11.084 petajoules (PJ) was off taken by FirstGen for 2022 as part of the PNOC's obligation to deliver the contracted banked gas.

<sup>29</sup> ESSO Phils. was renamed to Petrophil Corp. in 1973.

<sup>30</sup> Petron was partially privatized in 1994 through the signing of a stock purchase agreement with Saudi Aramco. San Miguel Corporation took full control of Petron in 2009.

In terms of its commitment to sustainable development and social responsibility, the PNOC continues to strengthen its Corporate Social Responsibility (CSR) Program through the conduct of various initiatives for the benefit of communities and environmental conservation, which include outreach programs, regular tree-planting activities, and coastal clean-up drives.

## Plans and Programs

To support its mission of complementing the private sector's efforts in developing energy sources and broadening the adoption of renewable energy technologies in the most cost-effective manner, PNOC will serve as:

**Catalyst of Emerging Energy Sources and Technologies.** In support of the DOE's intensified promotion of offshore wind (OSW) development in the country, the PNOC is set to repurpose its ESB into an OSW Power Integration Port. The project aims to serve about 32 OSW energy service contracts with 27.45 GW total potential capacity.

The PNOC is also exploring the development of aquavoltaics system, which revolutionizes energy generation by positioning solar panels on stilts above fishponds. This system covers only 40.0 to 60.0 percent of the water surface, positioned three (3) meters above the water level. Still in the conceptual phase, this innovative approach aims to effectively utilize space, generate clean electricity, and reduce evaporation by 85.0 percent, all without interfering with fish farming activities. With added benefit of water cooling, the system has a capacity of 40 MW/100 hectares (ha).

Aside from the rehabilitation of the Industrial Park in Bataan, it will also be promoted as a strategic location for liquefied natural gas (LNG) and LNG-related businesses. This entails strengthening partnerships and creating new alliances for the development of businesses in the natural gas industry, and other energy and energy-allied projects.

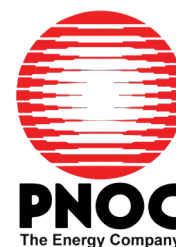
**Service Provider for Government Entities.** Part of the PNOC's plans and programs include serving as a retail energy supplier for government entities by giving them the option of sourcing more from renewable energy (RE) sources, which will lead to lower generation costs. Another project for government entities is the installation of rooftop solar PV systems through partnerships with the private sector.

**Social Enterprise of Energy Projects.** With the goal of being a strategic niche player in the Philippine energy industry, the PNOC aims to carry out the hybridization of off-grid areas with RE technology, which will be implemented together with the National Power Corporation (NPC).

Another project that supports the government's thrust towards energy transition and the development of indigenous energy resources is the identification of small-scale natural gas-to-power projects.

## A. PNOC Exploration Corporation

The PNOC EC has been actively involved in the exploration, development, and production of oil, gas, and coal resources since its creation in 1976. It has been a valuable partner of the DOE in ensuring the country's continuous energy supply.



The PNOC EC currently holds interests in nine (9) Petroleum Service Contracts (PSCs) and two Coal Operating Contracts (COCs)<sup>31</sup> (Table 8). Of the total PSCs, the company operates and holds a 100.0 percent interest in four (4), while actively partnering with other oil and gas exploration companies in the remaining contract areas. These include the 10.0-percent stake in the Malampaya Deepwater Gas-to-Power Project (SC 38), its primary revenue asset. In 2022 and 2023, revenues generated from Malampaya reached PhP4.56 billion and PhP3.71 billion, respectively. For COCs, PNOC EC holds and operates a 100.0 percent interest for both contracts.

<sup>31</sup> As of 24 November 2023

**Table 8. PNOEC EC Contracts**

| SC/COC                             | Location                            |
|------------------------------------|-------------------------------------|
| <b>Petroleum Service Contracts</b> |                                     |
| SC 37*                             | Cagayan Basin                       |
| SC 57*                             | Offshore NW Palawan (Calamian)      |
| SC 59*                             | SW Palawan (West Balabac)           |
| SC 79*                             | East Palawan (Araceli)              |
| SC 38 (10%)                        | Offshore NW Palawan                 |
| SC 58 (50%)                        | Offshore NW Palawan (West Calamian) |
| SC 74 (5%)                         | Offshore NW Palawan (Linapacan)     |
| SC 75 (35%)                        | NW Palawan                          |
| SC 6B (20%)                        | NW Palawan (Cadlao)                 |
| <b>Coal Operating Contracts</b>    |                                     |
| COC 41*                            | Zamboanga Sibugay                   |
| COC 204*                           | Malangas                            |

The PNOEC EC expanded its CSR initiatives by assisting and protecting the local communities and the environment through its four Kaagapay Programs: (1) Kaagapay sa Karunungan; (2) Kaagapay sa Kalikasan; (3) Kaagapay sa Kalusugan; and (4) Kaagapay sa Kabuhayan.

**Figure 26. PNOEC Areas of Interest**

## Plans and Programs

The PNOEC EC is committed to enhancing the country's energy self-sufficiency by providing additional supply of petroleum, natural gas, and coal for domestic requirements. To fulfill this commitment, the PNOEC EC will continue to implement the work program of its petroleum and coal contracts, ensuring that timelines are met.

Further, the PNOEC EC will intensify its efforts to expand its current portfolio through the pursuance of farm-in<sup>32</sup> opportunities for both local and overseas assets.

In pursuit of its corporate vision, the following projects have been prioritized in its roadmap:

1. SC 38 Malampaya – scheduled to conduct exploration drilling in 2025, leading to production in 2026;
2. SC 6B Cadlao – oil production in 2024 with potential additional drilling in 2025;
3. SC 37 Cagayan – planned drilling of Chico-1 prospect in 2024;
4. SC 57 Calamian – conducting a seismic program in 2024;
5. COC 41 Mine 3 Coal Project – currently in development (incidental production) phase, leading to production in 2024;
6. COC 41 Mine 4 Coal Project – targeting production in 2025; and
7. Asset Acquisition Project – continuous evaluation of domestic and overseas areas.



<sup>32</sup> Farm-in refers to the process by which one company (farmee) acquires rights to explore, develop, and produce in a specific area owned by another company (farmor). This is done through a Farm-in Agreement, where the farmee undertakes activities in exchange for a share of rights, production, or profits.

## B. PNOC Renewables Corporation



The PNOC RC stands as a wholly owned subsidiary of the PNOC, serving as the government's technical and research entity dedicated to spearheading the advancement and execution of sustainable RE and energy efficiency programs and projects. It holds the mandate to champion and carry out extensive research, development, utilization, manufacturing, sales, marketing, distribution, and commercialization of cutting-edge renewables, non-conventional, and alternative energy technologies.

Since 2008, the PNOC RC has remained dedicated to advancing the interests of consumers and stakeholders, improving the welfare of its employees, advocating for environmental stewardship, and fostering the holistic well-being of communities. As a partner agency, the PNOC RC collaborates closely with both National Government Agencies (NGAs) and Local Government Units (LGUs) to ensure the effective implementation of the Energy Efficiency and Conservation (EEC) Law, thereby playing a crucial role in promoting sustainable and responsible energy practices in the Philippines.

Over the years, the PNOC RC has demonstrated a strong commitment to sustainable energy initiatives, successfully developing and completing several notable RE and EEC projects. Some of these noteworthy projects include:

**Solar Rooftop Projects.** The PNOC RC collaborated with NGAs and academic institutions to launch the Rooftop Solar PV installation project in 2015. Among the notable achievements in this endeavor were the installations of the solar rooftop projects in the University of the Philippines – Diliman Campus (240-kWp), Philippine International Convention Center/PICC (1,050-kWp), and the House of Representatives (200-kWp), which promoted the adoption of cleaner and more efficient energy sources. The PNOC-RC provided comprehensive technical services, including the preparation of a technical study and support throughout the bidding process for the House of Representatives. This effort led to the successful installation of 436 Solar PV modules at the South Wing Annex building of the House of Representatives.

PICC 1,050-kWp  
Solar Rooftop



HOR 200-kWp  
Solar Rooftop



**Hydropower Projects.** The PNOC RC collaborated with the National Irrigation Administration (NIA) by signing a Memorandum of Agreement (MOA) in 2012 for the development of the six (6) initial sites located at the Pampanga River Irrigation System (PRIS) Main Canal, Barangay Poblacion West, Rizal, Nueva Ecija. These sites held a potential installed capacity of 1.0 MW and an estimated annual generation of 4.64 GWh.

**Energy Efficiency Projects.** As an accredited Energy Service Company (ESCO) by the DOE, PNOC RC capitalized on an opportunity to collaborate with the Philippine Public Safety College (PPSC), extending technical support and financial assistance for the implementation of an energy-efficient lighting system.

The partnership between the PPSC and PNOC RC was formalized through a MOA signed in March 2016. The five-year collaboration involved the replacement





of 3,725 bulbs in traditional fluorescent and compact fluorescent lamp (CFL) lighting fixtures by lightemitting diode (LED) in various locations including PPSC training camps, the Philippine National Police Academy (PNPA), and the National Police College (NPC). Transitioning to energy-efficient LEDs is anticipated to curtail lighting energy consumption by up to 50.0 percent.

**Technical Services with Private RE Companies.** In 2022, PNOC RC entered into a MOA with private companies to jointly develop large-scale RE projects. Under this partnership, the PNOC RC assumes the role of industrial partner, responsible for executing pending pre-development activities for the project. In exchange for these services, the private RE company compensates the PNOC RC.

The PNOC RC's commitment involves spearheading crucial pre-development tasks for the RE project, including (1) securing of Service Contract; (2) securing relevant permits and licenses; (3) preparing prefeasibility studies; (4) conducting feasibility studies (optional); (5) assisting in the application and processing of interconnection agreement; (6) supporting negotiations for power supply agreement (PSA); and, (7) assisting in securing project funding (optional). This collaboration enables PNOC RC to leverage its expertise in driving forward RE projects through their essential pre-development stages.

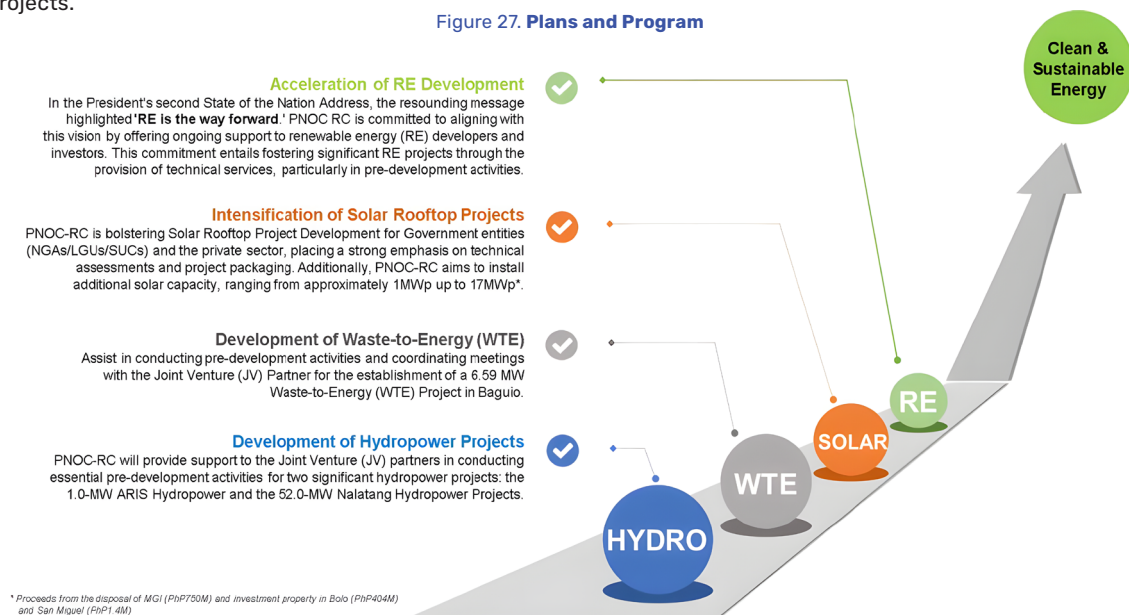
## Plans and Programs

The priority programs identified by the PNOC RC strongly focus on accelerating RE technologies, signifying its commitment to facilitating access to affordable, reliable, and resilient energy while promoting clean and sustainable energy. These initiatives aim to expedite the adoption of RE technologies in alignment with national targets, paving the way for a more sustainable and greener energy future for the Philippines. Among these programs are the following:

- 1 Intensification of solar rooftop programs in government agencies in partnership with private entities through technical consultancy.
- 2
  - Continue to operate and maintain its existing RE projects.
  - Bridge the gap between RE developers and regulatory agencies to expedite the implementation of RE projects.
  - Development of big-ticket RE projects through technical services and Joint Venture partnerships.

Figure 27 elaborates on the PNOC RC's strategies and initiatives, which include providing technical services for significant RE projects, intensifying solar rooftop installations, and developing hydropower and waste-to-energy projects.

Figure 27. Plans and Program



## II. National Electrification Administration



Since its inception in 1969, the National Electrification Administration (NEA) has been the government's implementing arm for rural electrification efforts. Tasked with the pivotal role of overseeing electric cooperatives (ECs), NEA aims to provide reliable and affordable electricity in the country's remote areas, ensuring that electricity access will be provided to the unserved and underserved communities of the country.

Despite steady progress in household electrification, NEA and its partner-ECs remain unwavering in their commitment to intensify efforts in expanding electricity access. To support President Ferdinand Marcos, Jr.'s "Bagong Pilipinas" thrust of achieving 100 percent total electrification by 2028, NEA aims to provide electricity to 2.7 million households within the franchise areas of the electric cooperatives from 2024 to 2028.

### Plans and Programs

**Sitio Electrification Program.** In collaboration with the ECs, NEA strives to energize even the most remote sitios through the Sitio Electrification Program (SEP). As of November 2023, 1,006 out of the targeted 1,085 for the year have been successfully energized. In 2022, NEA was able to energize 951 out of the 1,085 sitios earmarked for that year. These efforts align with the agency's overarching goal of providing electricity to 10,535 sitios within the current administration's term, with an estimated cost of Php26.34 billion.

**Barangay Line Enhancement Program.** The Barangay Line Enhancement Program (BLEP) seeks to improve distribution lines in barangays that previously relied on generator sets, solar home systems, and other RE sources for their electricity supply. For 2024, NEA intends to enhance two barangay lines and upgrade the remaining 419 barangay lines by 2028. The successful realization of this target requires a total funding of Php4.64 billion.

**Photovoltaic Mainstreaming (PVM) Program.** To accelerate rural electrification and achieve inclusive development in remote areas of the country, NEA has been continuously promoting the utilization of RE in rural electrification efforts. For households not connected to the grid and not covered by the electrification programs, NEA aims to deploy solar home system (SHS) units in 5,000 households in 2024. The goal is to expand SHS installations to 857,671 households by 2028 with a funding requirement amounting to Php35.57 billion.

**Funding Assistance Programs.** Through its Enhanced Lending Program, NEA has been instrumental in providing increased access to essential financing services for ECs to support their various operational needs, system improvements, and electrification projects. As of August 2023, the agency has successfully disbursed Php846.7 million in loans to 22 ECs, with P411.86 million earmarked for capital expenditure of 16 ECs. In addition, NEA oversees the Electric Cooperatives Emergency and Resiliency Fund (ECERF) intended for the restoration or rehabilitation of the ECs damaged infrastructure due to calamities, fortuitous events, or force majeure. NEA is committed to facilitating the timely release of EC loans estimated at Php1.0 billion annually along with the ECERF, which has a budget allocation of Php750 million annually to assist the affected ECs.

**Capacity Building Program.** To keep up with the evolving power industry landscape, NEA remains steadfast in its commitment to continuously enhance the technical capabilities of the ECs. Within the planning period, NEA aims to further strengthen the capacities of the ECs in conducting the Competitive Selection Process (CSP) and ensuring their compliance with the Renewable Portfolio Standards (RPS). This effort also involves assisting them in developing effective mitigation plans based on the most critical assets identified in vulnerability risk assessment, as well as preparing them for the implementation of Supervisory Control and Data Acquisition (SCADA) and Geographic Information System (GIS) under the smart grid roadmap.

### III. National Power Corporation



Established in 1936, the National Power Corporation (NPC) is mandated by the Electric Power Industry Reform Act (EPIRA) of 2001 to perform missionary electrification functions throughout the country. Part of its mission is to ensure the delivery of adequate and reliable power supply in remote islands that are not yet being served by the private sector through the New Power Providers (NPPs) and Microgrid Service Providers (MGSPs). In addition to its main function, NPC engages in watershed and dam management, while advocating the optimal use and operation of its remaining power generation assets.

To meet the growing needs of off-grid communities, NPC regularly formulates the Missionary Electrification Plan (MEP) and implements strategic programs to support the attainment of the government's total electrification program. These initiatives are aligned with the administration's call towards fostering inclusive growth and enabling access to clean and affordable electricity, thus contributing to the broader goals of sustainable development. To effectively fulfill its mandate, NPC remains committed to implementing its plans and programs that complement the DOE's strategic direction of *ensuring energy security, expanding energy access, and promoting a low-carbon future*.

#### Plans and Programs

**Sustaining 24/7 Operations in SPUG Areas.** Of the total 171 off-grid islands, NPC maintains operations in 148 areas through the Small Power Utilities Group (SPUG), while the remaining 23 isolated grids are being served by the NPPs and MGSPs. As of June 2023, NPC-SPUG provides 24/7 power service to 73 locations. Additionally, 19 areas benefit from more than 12 hours of service operations, while 56 areas receive less than 12 hours of power supply per day. To further improve the operations of SPUG facilities in remote and underserved areas, NPC is committed to implementing its modernization program through the re-fleeting of generating sets and augmenting existing capacities. This involves the replacement and refurbishing of aging and inefficient units, as well as the commissioning and leasing of additional gensets for increased service hours.

**Capacity Addition Program.** In fulfilling its mandate, NPC has programmed 32.81 MW of additional capacities scheduled for implementation within the term of the current administration. This initiative aims to augment the existing installed capacity of 244.39 MW (as of October 2023) from NPC-SPUG power plants, ensuring a sufficient and steady supply of electricity throughout missionary areas. Part of the strategy is the integration of 29.39 MW harnessed from RE sources, underscoring NPC's unwavering commitment to promoting the use of sustainable sources for power generation. In addition, NPC intends to deploy 3.42 MW of additional capacities through stand-alone mini-grids, extending electricity access to new areas.

**Transmission and Distribution System Projects.** In a proactive move to further strengthen the reliability and resilience of existing infrastructure, NPC is set to execute transmission and distribution system projects from 2024 to 2028. These include the installation of approximately 418.35 circuitkilometers (ckt-kms.) of transmission lines and the extension of about 204.18 ckt-kms. of distribution lines for existing and new missionary areas, covering the small island grids in Luzon (Catanduanes, Masbate, Palawan, Marinduque, and Mindoro) and island provinces in Mindanao (Sulu and Basilan). In addition to line extensions, NPC aims to increase the capacity of existing substations by adding a total of 90 Megavolt-Ampere (MVA), including the construction of eight (8) switching stations. These projects will improve the power network infrastructure, while meeting the growing electricity demand in off-grid areas.

**Total Electrification Program.** In accordance with Section 16.1 of the Implementing Rules and Regulations (IRR) of RA 11646 or the Microgrid Systems Act (MSA), NPC will continue its missionary electrification functions in areas where no participating or winning MGSP has been identified following a CSP. Consistent with the National Total Electrification Roadmap (NTER), NPC is targeting to accomplish 9,599 household connections between 2024 and 2028 by implementing various modes of electrification solutions, such as distribution line extension, regular connections, microgrid systems, or stand-alone home systems, among others. In pursuit of this goal, NPC is committed to collaborating closely with the DOE, NEA, and electric power utilities to facilitate and fast-track the government's target of achieving 100.0 percent household electrification by 2028.

**Hybridization Program.** To mitigate the risks and address the challenges posed by climate change, the government is boldly pushing for climate-centric plans and programs toward transitioning to cleaner and more sustainable sources of energy. NPC, on its part, has established complementary strategies promoting hybrid technologies that combine various RE sources with energy storage systems and fossil-based generators. This proactive approach is seen to effectively improve off-grid power system operations, leading to greater energy supply sufficiency, reliability, and sustainability. To attain this goal, NPC is accelerating the rollout of its hybridization program in 99 missionary areas through the deployment of solar photovoltaic (PV) units from 2024 to 2028 with an aggregate capacity of 24.85 megawatt-peak (MWp) supported by a battery energy storage system (BESS). This translates to a potential reduction of about 32.07 million liters of oil consumption, equivalent to a monetary savings of PhP2.18 billion.



Solar Hybrid Facilities in SPUG Areas

Source: <https://www.napocor.gov.ph>

## IV. National Transmission Corporation



The National Transmission Corporation (TransCo) is a government-owned and controlled corporation responsible for overseeing and holding ownership of the country's transmission assets. Following the awarding of a 25-year Concession Agreement in 2008, the authority for the management, operation, and expansion of the transmission network was officially transferred to the National Grid Corporation of the Philippines (NGCP). However, the redefined TransCo remains dedicated to advancing its strategic plans and programs to fulfill its mandated key responsibilities.

### Plans and Programs

**Ensure Compliance of NGCP to the Concession Agreement.** TransCo upholds its oversight role by ensuring NGCP's compliance with the terms and conditions of the Concession Agreement and the DOE policies. This commitment involves continuously monitoring the transmission assets being operated and managed by NGCP, including regular inspections in accordance with the annual inspection schedule. Likewise, it remains dedicated to overseeing NGCP's submissions to the ERC by conducting technical reviews and assessments of their proposed transmission projects, as well as participating in regulatory hearings.

**Fund Administration of Feed-in-Tariff Allowance (FIT-All) and Green Energy Auction Program (GEAP).** TransCo is responsible for the management, administration, and allocation of the FIT-All Fund for the benefit of FIT-eligible RE developers and participants in the Green Energy Auction Program (GEAP). To ensure prompt disbursement and enhanced efficiency of revenue distribution, TransCo is aiming to fully digitalize FIT and GEA revenue billing and payment processes, as well as the generation of financial reports using the Automated FIT-All Fund Management System (FFMS).

**Stand-alone Operation as Small Island Grid System Operator.** To mitigate recurring power outages and prevent system failures in off-grid areas, TransCo is mandated to function as the system operator (SO) to manage and operate small grid power systems. With the recent commencement of its initial operations in the Mindoro Grid, TransCo is in the process of finalizing the Mindoro Grid Protection Philosophy and Setting Guidelines. Consequently, the SO exit/phase-out plan will be formulated and implemented in anticipation of its interconnection with the Luzon Grid.

**Accelerate Settlement of Right-of-Way Claims.** TransCo is responsible for all existing right-of-way (ROW) claims that were accrued before the transfer of its operational duties to NGCP. In 2022, TransCo initiated a total of 199 right-of-way claims for settlement and expropriation cases, surpassing its initial target of 176. As part of ongoing efforts to enhance operational efficiency and service delivery, TransCo plans to include the ROW claims and monitoring system in its digitalization initiative to streamline the claims and settlement process, guaranteeing the smooth and unhampered operation and maintenance of its transmission lines.



## V. Power Sector Assets and Liabilities Management Corporation



The Power Sector Assets and Liabilities Management Corporation (PSALM) was created with the primary mandate of privatizing the NPC's generation and TransCo's transmission assets, managing and liquidating all assumed financial obligations, and administering the collection of Universal Charges (UC).

As of June 2023, PSALM successfully privatized 82.0 percent of its owned generating plants, independent power producer contracts, and decommissioned plants. In terms of liability and financial management, it reduced its financial obligations by PHP40.6 billion, marking an 11.0 percent reduction from the PHP355.9 billion recorded in June 2022. PSALM also collected PHP33.7 billion in privatization proceeds from winning bidders and remitted PHP2.6 billion to the National Treasury as cash dividends. PSALM anticipates its most significant revenue collection through the successful auction of the Casecnan Hydroelectric Power Plant (CHEPP) in May 2023, totaling USD 526 million with the financial closing targeted by December 2023. Under UC administration, a total of PHP21.3 billion in funds was collected and disbursed to UC beneficiaries.

### Plans and Programs

In the short- to medium-term, PSALM's key priorities involve divesting the NPC's remaining power assets, such as the Caliraya-Botocan-Kalayaan (CBK) hydropower facility, the Mindanao Coal, and the Mount Apo geothermal facilities. To optimize the electricity generation capacity of the Agus hydro facilities, significant effort is underway to successfully bid-out and implement the rehabilitation of the Agus-Pulangi Hydropower Complex via concession.

Several real estate assets, including properties in Bagac, Sucat, and Baguio, are set to be offered for sale. Plans include the disposal of non-Independent Power Producer Administrator (IPPA) areas in San Manuel and San Nicolas, Pangasinan, which are viewed as potential sites for RE projects. The Diliman property is also earmarked for redevelopment through a joint venture agreement, with the aim of transforming it into a mixed-use commercial estate featuring energy-efficient buildings.

As part of its ongoing activities, PSALM is committed to regularly apprising NEA of the status of ECs' obligations and continuously collecting proceeds from asset privatization, Universal Charge-Stranded Debt (UC-SD), plant revenues, and the 'Murang Kuryente Act' (MKA) allocation. Further, PSALM is actively involved in securing funding for and monitoring the operation of its owned power plants. In terms of organizational setup, PSALM will prepare a restructuring plan for the extension of its corporate life, which is set to expire in June 2026.

## E. FORGING STRATEGIC ALLIANCES WITH THE INTERNATIONAL COMMUNITY

The state of international affairs can affect the global energy landscape – from the world's ongoing recovery brought by the pandemic, the armed conflicts and geopolitical unrest, the economic power shift brought by trade liberalization to the unceasing movement to address the climate crisis – calls for a more secure, resilient, climate-centered, and sustainable energy regime for the country.

Advancing strategic alliances with the international community is crucial in responding and adapting to the ever-evolving global energy landscape. Continuous collaboration with the development partners (DPs) and international organizations (IOs) has led to the realization of a number of technical and financial assistance on energy projects in the Philippines, aligned and grounded on the country's energy policies and measures.

Moving forward, establishing partnerships and pursuing collaborative initiatives with the international and regional community will be fundamental in fostering the Philippines' national interests, as well as mitigating the negative external factors affecting the local energy industry. Various fora have also been established from these partnerships for intergovernmental cooperation, and political and socio-cultural integration.

The Philippines will likewise pursue cooperation efforts, including through sharing of best practices and technical insights in high-level assemblies and conferences, and implementing joint undertakings contained in the different work plans and programs. In addition, the country enforces domestic policies to help address emerging cross-sectoral challenges that is common across countries.

With this backdrop, the DOE will continue to leverage the country's national interests in the international fora under the principle of mutual benefit.

## **Establishing Energy Diplomacy in Response to the Global and International Energy Trends**

The Philippines will maximize these engagements by promoting investment opportunities and establishing agreements based on the country's core energy diplomacy.

### **A. Priority Areas for the Philippine Energy Sector: Core Energy Diplomacy**

The foremost intention of the Department of Energy (DOE) in the regional and international arena transcends across boundaries, which is anchored on the following strategic goals and focused targets:

- Achieve greater energy security, reliability, energy access, and affordability through the implementation of various mechanisms including the effective implementation of energy efficiency and conservation (EEC) measures;
- Mobilize climate transition financing not only for pilot projects but also for private initiatives;
- Access to technology and capacity, as well as encourage and allow third-party access to improve the transmission and distribution lines to enhance the resilience of energy systems and infrastructures;
- Achieve renewable energy (RE) targets by identifying and prioritizing projects that need investments and enabling such projects to be connected to the grid;
- Encourage rationalization of government policies on mining and processing of the critical minerals needed for low-carbon energy technologies such as solar panels, batteries, and wind turbines to achieve the energy transition together with the other National Government Agencies; and,
- Pursue research and development (R&D), and pilot projects involving emerging energy technologies, such as the use of energy storage systems, hydrogen and ammonia, carbon capture utilization storage (CCUS), and utilization of information and communication technology (ICT) for small to large scale energy systems.

### **B. Current Global and Regional Energy Trends**

Proactive efforts to transition to cleaner sources of energy are occurring on a global scale. Governments are crafting policies, plans, and programs, mobilizing finance and investments, and strengthening partnerships geared towards spurring economic growth while addressing the worsening climate crisis including through transitioning to low-carbon sources and technologies.



In 2023, global electricity demand growth is set to accelerate at a 5.2 percent annual growth rate from 2023-2025, more than 70.0 percent of which will come from the combined requirements of China, India, and Southeast Asia. The share of renewables in the global electricity demand is likewise forecasted to increase higher than all other sources combined with an annual growth rate of over 9.0 percent. In terms of power generation-related emissions, a decline in global electricity generation is projected due to lower gas and oil-fired generation that is expected to plateau in 2025. This will lead to a decrease in global greenhouse gas (GHG) emissions.<sup>33</sup>

## Elevating the Philippine Energy Sector in the International Arena

As part of continuously pursuing stronger international relations and partnership strategies to gain support from regional and international energy cooperation framework, the DOE proactively participates in the following engagements:

### A. Regional and Multilateral Engagements

#### 1. Association of Southeast Asian Nations (ASEAN)



The ASEAN Energy Cooperation (AEC) is a collaboration among the member states of the Association of Southeast Asian Nations (ASEAN) to promote regional energy security, sustainability, and integration. The key objectives of the AEC include enhancing energy efficiency, promoting RE development, ensuring energy access for all, and fostering cross-border energy trade and connectivity within the region. The AEC has established various initiatives and mechanisms to facilitate cooperation in the energy sector, such as the ASEAN Plan of Action for Energy Cooperation (APAEC), the ASEAN Petroleum Security Agreement (APSA), ASEAN Power Grid (APG) and Trans-ASEAN Gas Pipeline (TAGP). These, among other initiatives, aim to strengthen energy cooperation, address common energy challenges, and promote a more sustainable and resilient energy future for the ASEAN region.

**APAEC Phase II: 2021-2025.** APAEC is a comprehensive framework that guides ASEAN's energy cooperation. It covers seven (7) Program Areas: APG, TAGP, Coal and Clean Coal Technology, Energy Efficiency and Conservation, Renewable Energy, Regional Energy Policy and Planning (REPP), and Civilian Nuclear Energy (CNE). Likewise, it sets strategic goals and targets on increasing the share of RE, energy intensity reduction, and greater energy access, among others.

With the APAEC Phase II sub-theme of "Accelerating Energy Transition and Strengthening Energy Resilience through Greater Innovation and Cooperation," the DOE emphasizes activities identified on pandemic recovery efforts, cross-cutting issues such as climate change and decarbonization, energy transition, energy investment and financing, new and emerging energy technologies, and digitalization of the energy sector.

**ASEAN Power Grid.** The proposal to connect the power grids of the ASEAN Member States (AMS) was first established at the 2nd ASEAN Informal Summit held in Kuala Lumpur, Malaysia in December 1997. The APG was one of the key components of the ASEAN Vision 2020, with the goal of promoting more efficient, economical, and secure operation of power systems through the harmonious development of national electricity networks in ASEAN through region-wide interconnections.

The APG Memorandum of Understanding (MOU), which was signed in 2007 and ratified in 2009, has a validity period of 15 years, or until 19 March 2024. During the ASEAN Special Senior Officials Meeting on Energy (SOME) held in January 2023, the AMS agreed to extend the validity of the current APG MOU for two (2) years as an interim measure to prepare for amendments of the said MOU or formulate a new one.

The AMS, in coordination with the ASEAN Secretariat, the ASEAN Centre for Energy (ACE), and the Heads of ASEAN Power Utilities Authorities (HAPUA) are now undertaking the necessary processes to renew the APG MOU through Instruments of Extension (IOE) for signature of designated authorities of AMS. The DOE already secured the Signing Authority from the Office of the President (OP) on 22 August 2023 and subsequently signed the IOE.

<sup>33</sup> <https://iea.blob.core.windows.net/assets/255e9c8a-da84-4681-8c1f-458ca1a3d9ca/ElectricityMarketReport2023.pdf>



Relatedly, the Philippines manifested support to the power integration projects (PIPs) in the ASEAN region under the APG, including the implementation of the Lao PDR-Thailand-Malaysia-Singapore (LTMS)-PIP and the proposed sub-regional Brunei Darussalam-Indonesia-Malaysia-Philippines (BIMP)- PIP.

- **Trans-ASEAN Gas Pipeline.** The TAGP is among the important infrastructure projects under the APAEC framework focusing on gas pipelines and liquefied natural gas (LNG), which aims to establish interconnection projects to ensure greater gas supply security and sustainability while connecting existing and planned pipelines and regasification terminals with the view of minimizing the environmental impact.

First signed in 2002, the TAGP MOU was aimed at providing a broad framework for ASEAN on TAGP projects supporting the initiatives on greater regional energy security. In 2013, the MOU was extended until 20 May 2024. The strategic direction was also reassessed to include LNG as an option for gas supply, and LNG supplied to regional regasification terminals (RGTs) as virtual pipelines.

With the impending expiration of the MOU, the AMS are also expected to undertake the necessary processes together with the ASEAN Secretariat, ACE, and ASEAN Council for Petroleum (ASCOPE) to extend the MOU for another 10 years, or until 20 May 2034. The Instrument of Extension for the TAGP MOU is also targeted to be signed by AMS before end of this year.

- **ASEAN Petroleum Security Agreement (APSA).** To further strengthen multilateral and bilateral cooperation on energy security, the Philippines together with the other AMS continues to pursue initiatives (short- to long-term measures) to enhance partnerships within the region through various cooperation, such as the APSA which was formulated way back in 1986.

Specifically, the APSA aims to enhance petroleum security, either individually or collectively, and minimize exposure to an emergency situation, through the implementation of short-, medium-, and long-term measures provided in this agreement. The APSA was extended and remained in force for 10 years (22 March 2013 to 22 March 2023).

During the SOME Meeting in January 2023, the AMS agreed on a commitment to have APSA renewed/extended before its expiration. With this, the AMS undertook the necessary domestic processes to submit their respective IOE for the extension of the APSA until 22 March 2025. The DOE signed the IOE on 20 March 2023 through the Signing Authority issued by OP.

- **Renewable Energy and Energy Efficiency and Conservation.** Under the APAEC, ASEAN sets aspirational targets on RE and EEC as follows:
  - o Increase RE share to 23.0 percent in the ASEAN energy mix, including its share in installed power capacity to 35% by 2025; and,
  - o Reduce energy intensity by 32.0 percent in 2025 based on 2005 levels and encourage further EEC efforts, especially in transport and industry sectors.

As reported in the 22nd ASEAN Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN) held on 29 May 2023 in Singapore, the ASEAN's RE share in the total primary energy supply (TPES) stood at 14.4 percent, and RE share in Installed Capacity reached 32.8 percent, while the reduction in energy intensity in the TPES and Total Final Energy Consumption (TFEC) stood at 24.5 percent and 30.0 percent in 2021, respectively, compared to 2005 levels.

It can be noted that the Philippines is leading among the AMS in terms of RE share in the TPES at 22.8 percent in 2021. While this may be the case, the Philippines is one with the AMS in encouraging the promotion of new RE projects to increase the share of RE in the power sector. Promotion of RE in the end-use sector, including



biofuels in transport, and acceleration of support infrastructures such as storage, grid and interconnection, are also being looked at within the region.

In the area of EEC program, ASEAN achieved an energy intensity reduction of 21.0 percent in 2018, based on TPES, surpassing its aspirational target of 20.0 percent in 2020 (over 2005 levels). In 2021, intensity reduction in TPES was recorded at 24.5 percent, while 30.0 percent intensity reduction in Total Final Energy Consumption (TFEC) was likewise realized.

On 16-17 February 2023, the Philippines hosted the 4th Government-Private Forum on Cleaner Energy Future Initiative for ASEAN (CEFIA) back-to-back with the 17th ASEAN+3 (China, Japan, Korea) New and Renewable Energy (NRE) and Energy Efficiency and Conservation Forum held in Mandaue City, Cebu. The 17th NRE and EEC Forum served as a platform for continuous information sharing on new initiatives, policy updates, and best practices for promoting RE and EEC, as well as pursue capacity building activities that will lead to increasing the share of RE and enhancing EEC programs to achieve the goals of sustainable development.

On the other hand, the CEFIA Forum is a venue to facilitate collaboration between public and private sectors for the development of cleaner energy and decarbonization technology and acceleration of energy transition in the ASEAN+3 region.

- **Civilian Nuclear Energy.** Under this program, ASEAN aims to build human resource capabilities in nuclear science and technology for power generation. The CNE program has made progress in increasing the capacities of AMS in policy, technology, and regulatory aspects of nuclear energy. The DOE hosted the 13th ASEAN Nuclear Energy Cooperation Sub-Sector Network (NEC-SSN) Meeting held on 11-13 April 2023 in Clark, Pampanga. The Meeting discussed updates on the implementation of the work program and activities of the CNE Program area under the APAEC. The NEC-SSN aims to build ASEAN-wide cooperation on the use of nuclear energy for power generation purposes. The Philippines continues to be the country coordinator/chairperson for the said SSN.

**Senior Officials Meeting on Energy (SOME).** The DOE regularly participates in SOME to manifest our unwavering commitment to advancing regional cooperation. During the 41st SOME held in Jakarta, Indonesia on 19-23 June 2023, the progress of the APAEC Phase II implementation including the plans to renew the APG and TAGP MOUs, as well as the APSA were discussed among other important areas.

**ASEAN Ministers on Energy Meeting (AMEM).** In 2023, Indonesia took over the ASEAN Chairmanship after a successful run by Cambodia in 2022. Under the theme “Epicentrum of Growth,” Indonesia led ASEAN in accomplishing the key priorities in alignment with core spirit of ASEAN: One Vision, One Identity and One Community. According to the ASEAN Desk, the Philippines may be scheduled to assume the ASEAN Chairmanship in 2026.

The DOE, headed by the Energy Secretary, participated in the 41st AMEM and Associated Meetings held in Bali, Indonesia on 22-26 August 2023.

**Timor-Leste’s Accession to ASEAN.** In the ASEAN Leaders’ Statement issued on 11 November 2022, the AMS agreed in principle to admit Timor-Leste to be the 11th member of the ASEAN and has been granted observer status and allowed participation in all ASEAN Meetings including at the Summit plenaries. In fact, Timor-Leste’s Prime Minister was able to participate in the 42nd ASEAN Summit held on 10-11 May 2023 in Indonesia, wherein the Roadmap for Timor-Leste’s Full Membership was adopted.

## 2. Asia Pacific Economic Cooperation (APEC)

APEC is a forum that promotes economic cooperation and trade among its member economies in the Asia-Pacific region. It was established in 1989 and consists of 21 member economies, including Australia, Canada, China, Japan, South Korea, New Zealand, the United States (U.S.), and seven ASEAN economies (excluding Cambodia, Lao PDR and Myanmar). The goals of APEC are to facilitate economic growth, promote free trade, and enhance regional integration and connectivity. APEC holds annual meetings and engages in various initiatives and dialogues to achieve its objectives.

New energy-related goals are initially being discussed under the APEC Energy Working Group (EWG). The Philippines shall constantly participate in the deliberations, monitor the developments, and safeguard its implication to the Philippine Energy Plan (PEP).

The Philippines sees merit in the importance of collaboration and being part of the region's energy goals. It is important for APEC to keep pace with the changes over time to ensure energy security, accessibility, affordability, resiliency, and sustainability within the region.

The Philippine participation in APEC under Energy Cooperation includes the EWG and Energy Ministers Meeting (EMM).

**Energy Working Group (EWG).** Energy is a specific focus area within the Asia-Pacific Economic Cooperation (APEC) forum. It aims to promote collaboration and cooperation among APEC member economies in the energy sector. The APEC EWG leads the efforts in this area, addressing key energy challenges and opportunities in the region.

- **EWG Updates.** The 65<sup>th</sup> Meeting of the APEC EWG (EWG65) was hosted by the United States last May 2023 in Detroit, Michigan. This was the first in-person meeting of the working group since October 2019, which was held in Chile (EWG58).

The EWG65 discussed updates on energy security initiatives (ESI) and the Working Group's current and future initiatives, including the drafting session/negotiation for the proposed ministerial joint statement for the 13<sup>th</sup> Meeting of the APEC Energy Ministers Meeting (EMM13), which was held in August 2023 in Seattle, Washington. The EWG is considering a new aspirational collective target for the power sector, which is about 60.0 to 70.0 percent of electricity generated using carbon-free and carbon-neutral sources for the APEC region by 2035.

It may be recalled that in 2007, the APEC Leaders agreed to a regional aspirational goal of reducing energy intensity by at least 25.0 percent by 2030 (based on 2005 levels). Such target has been increased to 45.0 percent by 2035 as agreed by the APEC Leaders in 2011. Moreover, the APEC Leaders during their meeting in 2014 endorsed a new aspirational goal to double the share of RE in APEC's overall energy mix by 2030 (from 2010 levels) and increase cooperation to achieve it.

The revised ESI provides a framework for the EWG to undertake activities that support the energy security goals of the APEC member economies to provide access to affordable, reliable, resilient, modern, and sustainable energy. The APEC member economies can use the framework as they pursue respective energy security pathways based on resource endowment and development stages and in line with the implementation of the Paris Agreement. Recognizing the APEC's fundamental principles of cooperation, voluntary participation, and mutual respect, as well as the widely differing circumstances among economies, the ESI framework will provide a range of options from which economies can choose to focus their cooperative efforts.



A comprehensive approach to energy security must consider the following:

- o Development of the widest variety of energy sources and technologies to support energy access to enhance energy security and promote sound and sustainable socio-economic development across the region, consistent with global climate objectives and with each economy's environmental, geopolitical, economic, and social circumstances;
- o Development of open, competitive, and transparent energy markets and effective energy governance;
- o Supply security of conventional energy resources, and advanced and emerging energy technologies and their essential inputs, such as critical minerals and materials, semiconductors, and related technologies; and
- o Security, reliability, sustainability, accessibility, resilience, and connectivity of energy infrastructure.

The ESI activities could include workshops, training, seminars, studies, best practice guides and manuals, demonstrations, peer reviews, research, data collection and analysis, and dissemination of information. Activities will utilize the resources and expertise of the EWG Expert Groups, Task Forces, and Centers and will be managed by the EWG members. Key elements of this initiative should be to highlight and strengthen the linkages of work that the EWG is already undertaking and to strengthen dialogues and cooperation with related APEC sub-fora, as well as other international organizations and institutions such as the G20, the Clean Energy Ministerial (CEM), and the IEA, as appropriate. Members will seek greater involvement from the finance and business community in support of the overall ESI.

- **EWG 2023 Work Plan.** The EWG Work Plan 2023 takes off from the APEC Putrajaya Vision 2040 (PV 2040) where APEC Leaders committed to building “an open, dynamic, resilient and peaceful Asia-Pacific community by 2040” by pursuing a “strong, balanced, secure, sustainable and inclusive growth.” Of particular relevance to EWG is to “promote economic policies, cooperation, and growth, which will support global efforts to comprehensively address all environmental challenges, covering climate change, extreme weather, and natural disasters, for a sustainable planet.” In line with the PV 2040 and the Aotearoa Plan of Action (APA), the EWG’s work for 2023 supported the Economic and Technical Cooperation (ECOTECH) Medium-Term Priorities (APA ECOTECH-related Collective Actions), such as:
  - o Promoting sustainable growth across sectors and the development of cost-effective low and zero-emissions technologies, sustainable finance, and, if appropriate, carbon pricing mechanisms;
  - o Ensuring energy security, access, reliability, and resilience through energy transition; and
  - o Seeking to deliver existing Leaders’ commitments on energy issues, particularly to accelerate progress towards the 2030 target of doubling the RE share in the APEC energy mix, including in power generation, from 2010 levels by 2030; and to deliver a plan to reduce aggregate energy intensity by 45.0 percent, from 2005 levels, by 2035.
- **Expected Outcomes.** In 2023, the EWG seeks to advance the overarching objectives laid out in the PV2040, APA, and Bangkok Goals and follow the Leaders’ guidance to continue to work together to support energy resilience, access, and security in the region, while acknowledging the importance of stable energy markets and supporting clean energy transition. The EWG also continues to encourage members to seek alignment with the La Serena Roadmap for Women and Inclusive Growth Implementation Plan to enhance women’s participation in the energy field.

The EWG’s 2023 priorities are consistent with and guided by the annual APEC priorities agreed by Senior Officials. In 2023, under the overarching theme of “Interconnected. Innovative. Inclusive,” the EWG is guided by the priority of “Creating a Resilient and Sustainable Future for All.” In the first half of 2023, the EWG held a policy workshop on Just Transition, the priority issue proposed by the U.S. as the 2023 APEC host economy.

The EWG’s 2023 work plan also supported the ESI 2022, which promotes collaboration on energy sources and technologies; energy markets and governance; security of supply chains; and infrastructure security, reliability, access, and resilience.

**Energy Ministers Meeting (EMM).** The APEC EMM is a high-level gathering of energy ministers from the APEC member economies. It takes place biennially to discuss and address energy-related issues and promote cooperation in the energy sector.

The Philippines hosted the 12th EMM in Cebu in October 2015. During the EMM12, the Ministers issued the Cebu Declaration and Instructions, which emphasized the importance of energy resiliency in the face of the effects of man-made and natural disasters and established a new EWG Task Force to take this work forward. The Ministers also welcomed the new APEC Initiative for Enhancing the Quality of Electric Power Infrastructure, taking various factors into consideration, including resilience to disasters, lifecycle costs, and environmental impacts, and instructed officials to implement an APEC Green Energy Finance Initiative in support of the financial sustainability of RE and energy efficiency development in the region.

The 13<sup>th</sup> EMM hosted by the U.S. in August 2023 adopted a theme, “Creating a Resilient and Sustainable Future for All.”

### 3. Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA)



The BIMP-EAGA was established in March 1994, in Davao City, Philippines. It was initiated as a cooperative effort by four (4) nations (Brunei Darussalam, Indonesia, Malaysia, and the Philippines) to expedite the socio-economic progress of underdeveloped, marginalized, and geographically distant regions within their respective countries. The overall objective of this initiative is to reduce the disparities in development across the member nations. The BIMP-EAGA covers the entire sultanate of Brunei Darussalam; provinces in Kalimantan, Sulawesi, the island chains of Maluku and Papua in Indonesia; states of Sabah and Sarawak and the federal territory of Labuan in Malaysia;

and the entire island of Mindanao and the province of Palawan in the Philippines. Since its inception, the cooperation program has adopted a public-private approach to development, with the private sector driving growth and the public sector playing a supporting role.

The Philippines’ active participation in BIMP-EAGA meetings, particularly in energy matters, is crucial for promoting energy security, sustainable development, and economic growth within the sub-region. By exchanging/sharing expertise, resources, and experiences, the Philippines can help formulate effective strategies, policies, and projects that address common energy challenges, fostering a resilient and integrated energy sector and benefiting the people in the region:

**BIMP-EAGA Power and Energy Infrastructure Cluster (PEIC).** The BIMP-EAGA PEIC has developed a comprehensive nine-year roadmap (2017-2025) to guide its efforts in power and energy infrastructure development. The PEIC aims to facilitate cooperation among member countries in power and energy infrastructure development. It serves as a platform for sharing knowledge, experiences, and best practices in areas such as energy efficiency and conservation, RE, and power interconnection. The PEIC promotes collaboration, project planning, and policy formulation to enhance energy security, sustainable development, and economic growth within the BIMP-EAGA sub-region.

The Philippines hosted the 10<sup>th</sup> BIMP-EAGA PEIC Meeting and Energy Conserving Design (ECODE) Workshop for Buildings held on 25-28 September 2023 in Puerto Princesa, Palawan.

**BIMP-EAGA Ministerial Meeting.** During the 25<sup>th</sup> BIMP-EAGA Ministerial Meeting in November 2022 in West Kalimantan, Indonesia, the member countries acknowledged the study on the potential areas for Renewable Energy Certificates (RECPA) within the BIMP region, which was funded through the cooperation with South Korea. The Meeting, likewise, commended the completion of major enclave interconnections, specifically the Tanjung Redeb-Tanjung Selor interconnection in Indonesia and the Mindanao-Visayas Interconnection Project (MVIP) in the Philippines. These projects address the increasing energy demand and provide sustainable and reliable energy access to communities.

### 4. United Nations Framework Convention on Climate Change (UNFCCC)

**Outcomes of 27<sup>th</sup> Session of the Conference of Parties (COP27).** The COP is the Convention's highest decision-making body. All States that are Parties to the Convention are represented at the COP in which decisions are made necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements.



The Philippines, as a Party to the Convention, regularly participates in the COP as this is the biggest platform for nations and stakeholders to negotiate and address climate change and its adverse impacts. The country will continue to assert and safeguard the Philippines' interest in climate change negotiation, ensuring that we receive the appropriate support and assistance as a country vulnerable to climate change.

The COP27 was held on 06-18 November 2022 in Sharm El-Sheikh, Egypt. The Philippine delegation to COP27 was headed by the Department of Environment and Natural Resources (DENR) Secretary<sup>34</sup>. The outcomes of the said Meeting are discussed in detail under the Environment Chapter of this plan.

## B. New and Other International Energy-Related Undertakings

### 1. Asia Zero Emission Community (AZEC)

On 3-4 March 2023, the DOE delegation headed by the Energy Secretary attended the AZEC Ministerial Meeting and Associated Meetings, as well as the Investment Forum in Tokyo Japan together with the Ministers and government officials from Australia, Brunei Darussalam, Cambodia, Indonesia, Japan, Malaysia, Thailand, Singapore, and Viet Nam.



The events under the AZEC initiative provided opportunities for discussion on key matters crucial to the realization of AZEC's goals, while balancing decarbonization efforts, energy security, and economic growth with due consideration to the unique capabilities and circumstances of each country. In addition, the Ministers/Heads of Delegations welcomed the initiatives of Japan to mobilize its financing, technology know-how, and expertise and encouraged stronger engagement with the private sector and other international partners to create and accelerate concrete cooperation to support the move of participating countries for energy transition and carbon neutrality.

### 2. Indo-Pacific Economic Framework (IPEF) for Enhancing Prosperity

This framework is intended to advance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness for our economies through four Pillars, specifically: (1) Trade, (2) Supply Chains, (3) Clean Economy, and (4) Fair Economy. The IPEF is composed of 14 countries as Parties/Partners to this Agreement, namely: Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, United States, and Viet Nam. Through this initiative, the Parties aim to contribute to cooperation, stability, prosperity, development, and peace within the region.

Under Pillar I and Pillar II, where the DOE is also a member agency of the Philippine delegation, the IPEF Partners will work towards trade facilitation, as well as diversification of the supply chain in the region, which may help significantly in attaining energy security, resiliency, and sustainability.

Under Pillar 3, the DOE is the Philippines co-lead together with the Department of Finance (DOF). This Pillar aims to accelerate efforts in collectively addressing the energy and infrastructure needs of the IPEF region, including through initiatives that support GHG emissions mitigation, enhanced energy security, and climate resilience and adaptation, while building on shared objectives geared towards strengthening cooperation, identifying innovative approaches to mobilize finance, improve competitiveness, and promote quality partnerships, platforms, and sustainable projects.

Further, under Pillar III, the Philippines has circulated and presented a non-paper that provides a nonexhaustive list of the tangible benefits the country seeks in this cooperation. These include the following:

- Creating a clean economy investment forum or platform;
- Establishing an integrated clean energy supply chain;
- Mainstreaming Innovative Financing Instruments unique to IPEF, including mobilizing Sustainable Finance and exploring transition finance;
- Exploring a center of excellence for research and development in the clean economy; and
- Mainstreaming Green Jobs for a Just Energy Transition and Decent Work

<sup>34</sup> The United Arab Emirates (UAE) hosted COP28 in Dubai from 30 November to 12 December 2023. The DENR headed the Philippine Delegation to COP28.

The U.S. likewise shared its work towards securing investments for Pillar III to include mobilization of private capital by deploying blended finance, convening investors, and building project pipelines. Finally,

the meeting also highlighted the support for research, knowledge exchange, and skills development by expanding access to digital tools, workforce training, and academic partnerships.



In May 2022, the Philippines joined the Indo-Pacific Economic Framework (IPEF) with Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, Singapore, Thailand, United States, and Viet Nam.

Finally, the Philippines proposed a cooperative work program on Mainstreaming Green Jobs for a Just Energy Transition. The Proposal aims to conduct initiatives that will support workers in the transition to a clean economy.

## C. Trade-Related Agreements/Economic Partnerships

The DOE participates in various inter-agency trade-related activities and undertakings, such as the Committee for ASEAN Economic Community of the ASEAN Matters Technical Board (AMTB) and the Technical Board on APEC Matters (both under the Philippine Council for Regional Cooperation), the Committee on Trade in Goods and the Philippine Working Group on Services led by the Department of Trade and Industry (DTI), and the Inter-Agency Committee on Trade in Services spearheaded by the National Economic and Development Authority (NEDA).

The DOE is still actively engaged in free trade areas/regional trade areas such as the World Trade Organization (WTO), ASEAN Free Trade Area (AFTA), and Regional Comprehensive Economic Partnership (RCEP) Agreement, among others. Below are the recent updates on trade-related initiatives:

### 1. WTO

**Passage of Executive Order (EO) 10.** On 29 December 2022, an Executive Order was signed extending the temporary modification of rates of import duty on meat of swine, maize (corn), and coal specified in EO 171, s. 2022. Said extension is aimed at maintaining affordable prices for these commodities to ensure food and energy security, reduce the cost of electricity, and diversify the country's market sources.

The temporary modification shall take effect until 31 December 2023, except for coal which shall be applied zero duty, subject to semestral review after 31 December 2023.

**Passage of Executive Order 12.** On 13 January 2023, the EO temporarily modifies the rates of import duty on electric vehicles (EVs), parts, and components was signed to boost growing EV industry in the country and support the transition to other emerging clean energy technologies. Through this EO, the government hopes to encourage consumers to consider EVs as a cleaner and greener transportation option.

The EO shall be subject to review after one year from its implementation and shall be in full effect for a period of five (5) years.

Meanwhile, the Tariff Commission (TC) conducted a consultation last 01 June 2023 regarding the Comprehensive Review of the Most Favored Nation (MFN) Tariff Schedule to set the MFN tariff rates for 2024 to 2028, pursuant to Section 1603 (b) of Republic Act (RA) 10863, otherwise known as the Customs Modernization and Tariff Act (CMTA).

The DOE submitted a position paper on products being requested for tariff modification and tariff lines proposed for merging.

## **2. RCEP**

Following the signing of the RCEP in 2020, the Philippines became the latest country to ratify the said Agreement through Senate Resolution 485 issued on 22 February 2023.

The RCEP Agreement is reflective of the country's offensive interest to progressively liberalize trade and create a competitive investment environment in the region, including the energy sector. It provides opportunities for expanded market access and establishes clear, stable, and predictable rules on trade in energy goods and services, including investments among participating countries.

Energy-related trade in services would further improve the business climate of the energy sector in the country, supportive of the DOE's aggressive push for the exploration, development, and utilization of the country's indigenous energy resources as we are transitioning to a low-carbon future.

Even before the country acceded to RCEP, the ASEAN and ASEAN+1 Free Trade Partners already enjoyed zero percent (0%) tariff rates on energy goods covered under Chapter 27 of the Tariff Book published by the TC. This is preserved in the RCEP Agreement as a reaffirmation of the continued cooperation on energy trade in the region.

The tariff elimination is important to ensure an unhampered supply of commodities, considering the reduced production from the Malampaya reserves. The zero percent tariff rate is also applicable to LNG, especially that the Philippines considers this as a transition fuel for power plant supporting variable RE, which will come into play this year in the country.

Above all, the DOE is one with the government in assuring the public that the RCEP Agreement will not adversely impact the country's energy supply chain. At the very least, it will further boost and encourage trade and investments in the country towards affordable, reliable, resilient, secure, clean, sustainable, climate-centered, and accessible energy.

Following this development, EO 25 was signed on 07 May 2023 on the implementation of the Philippine Schedule of Tariff Commitments, as well as the modification of rates of import duty on certain imported articles under RCEP.

## **3. ASEAN-United Kingdom (UK) Dialogue Partnership**

The ASEAN-UK Dialogue Partnership was formalized in August 2022, the first new ASEAN Dialogue agreed in 25 years. The ASEAN and UK's shared principles and priorities regarding partnership covering the areas of trade, investment, climate change and the environment, security, science and technology, and education will lead to enhanced economic collaboration and closed ties between the two sides.

## **4. ASEAN-Canada Free-Trade Agreement (ACAFTA)**

The ACAFTA was launched on 17 November 2021, which reaffirmed the growing relationship between ASEAN and Canada and the latter's commitment to trade and economic engagement in the region.

One of the major provisions to be negotiated is the proposed Environment Chapter, which aims to ensure that environmental protection is upheld as trade and investment are liberalized. The attempt to include an Environmental Chapter in an ASEAN+1 FTA is the first of its kind, and the DOE has committed to be part of the Philippine negotiating team to ensure that the energy agenda is pursued in this realm.





## **D. Bilateral Energy Cooperation**

The DOE is involved in bilateral negotiation and consultation mechanisms headed by the DTI, NEDA, and the Department of Foreign Affairs (DFA). Some of the few consultations/mechanisms are the Philippines-US Bilateral Strategic Dialogue; Philippines-Switzerland Joint Economic Commission; Philippines-Russia Political Consultations; Philippines-France Joint Economic Commission; Philippines-Japan High Level Joint Committee on Infrastructure Development and Economic Cooperation; Philippines-Hungary Joint Commission on Economic Cooperation; Philippines-India Joint Commission on Bilateral Cooperation; Philippines-Canada Joint Economic Commission; Philippines-Morocco Energy Cooperation; and Philippines-Korea Policy Consultations.

Specific to bilateral cooperation on energy, below are some of the recent cooperation initiatives of the Philippines with other countries:

### **1. Philippines-United States (PH-US)**

On the sidelines of CERAWeek 2022 in Houston, Texas, the Philippines and the U.S. signed two documents, namely the MOU Concerning Strategic Civil Nuclear Cooperation or the NCMOU, and the Clean Energy Demand Initiative (CEDI) Letter of Intent (LOI). The NCMOU serves as a non-legally binding document that highlights both countries' mutual interest in working together and developing solutions on their respective nuclear energy needs consistent with their shared security interests. On the other hand, CEDI aims to bring corporations and countries together to promote investments and rapidly deploy clean energy.

### **2. Philippines-France (PH-FR)**

The Philippines and France welcomed the signing of the MOU between Hydrogène de France (HDF) and the National Power Corporation (NPC) and the Mindanao Development Authority (MinDa) on 20 June 2023 to facilitate the development of RE and hydrogen projects in Small Power Utilities Group (SPUG) Areas and in Mindanao. Both countries also agreed to strengthen bilateral cooperation in areas of infrastructure and transportation, aeronautics, agriculture, electronics, maritime industry, and shipbuilding.

### **3. Philippines-Hungary (PH-HU)**

An MOU was signed in 2021 to strengthen cooperation in the field of higher education, particularly in the nuclear field and in diplomatic training. It will also facilitate the setting up of long-term cooperation in the nuclear field between the two countries, making accessible high-quality nuclear education and professional training for Filipinos. Further, the agreement on diplomatic training will encourage the participation of diplomats, and the members of the Philippine Nuclear Energy Program Inter-Agency Committee (NEP-IAC) in each other's training, as well as the exchange of academics, speakers, and experts. Currently, both sides have already nominated the respective Administrators for the implementation of the said MOU.

### **4. Philippines-India (PH-IN)**

The draft MOU between the DOE and the Ministry of New and Renewable (MNRE) of India in the field of renewable energy is still being finalized by the Parties.



The purpose of the MOU is to establish the basis for a cooperative institutional relationship to encourage and promote bilateral technical cooperation on RE based on mutual benefit, equality, and reciprocity between the Parties.

The areas of cooperation will focus on the development of RE in the following areas:

- Solar Energy
- Wind Energy
- Biomass/ Bioenergy/ Waste to energy
- Small Hydro
- Storage and Capacity Building

## 5. Philippines-Indonesia (PH-ID)

During the 7<sup>th</sup> Senior Officials' Meeting of the Philippine-Indonesia Joint Commission for Bilateral Cooperation (JCBC) held on 11-12 April 2022, the DOE proposed to pursue a new bilateral agreement focusing on wider areas of cooperation across the spectrum of energy.

Said draft MOU between the DOE and the Ministry of Energy, Minerals, and Resources (MEMR) of Indonesia on Cooperation in the Field of Energy intends to replace the expired MOU on the Cooperation on Long-Term Coal, Oil, and Gas Supply and Geothermal Energy Development. Collaboration under this new MOU may include, but is not limited to the following: a) minerals and coal, and clean coal technology; b) oil and gas, covering upstream and downstream development, LNG, international standards, and Health-Safety-Security-Environment (HSSE) best practices for project siting, design, construction, expansion, rehabilitation, modification, operation, and maintenance of energy projects/facilities; c) energy transition; d) renewable energy; e) energy efficiency and demand-side management; f) electric vehicles and alternative fuels; and, i) geological-related risk mitigation.

## 6. Philippines-Saudi Arabia (PH-KSA)

The Philippines and the Kingdom of Saudi Arabia (PH-KSA) have ongoing discussions on the proposed MOU between the DOE and the Ministry of Energy, Industry, and Mineral Resources of KSA, specific to the oil and gas sector.

The proposed cooperation will promote and strengthen collaboration in the oil and gas sector through:

- Exchange of information and analysis regarding world petroleum markets and ways to achieve stability;
- Exchange visits and holding meetings between representatives of the petroleum industry from both countries;
- Technical cooperation between their respective firms and companies in the execution of joint projects in the petroleum sector; and
- Cooperation in activating the dialogue between petroleum-producing countries in various aspects and the upgrading of its instruments including the International Energy Forum (IEF) to stabilize energy markets and achieve prosperity.

## 7. Philippines-Qatar (PH-QA)

An ongoing discussion between the Philippines and the Government of the State of Qatar on the formulation of an MOU on Energy Cooperation. Apart from the promotion, development, and strengthening of energy cooperation between the two countries, the MOU is intended to provide mutual benefit to the parties by enhancing and stimulating their respective economic, industrial, and social development. The initial proposed areas of cooperation under this are:

- Oil, gas, and related products, and services including LNG;
- Power generation, transmission, and distribution;
- Renewable Energy;
- Energy Efficiency and Conservation; and,
- Alternative Fuels and emerging technologies.

The cooperation framework and activities will be implemented through:

- Bilateral Consultations;
- Sharing of knowledge, experience, and their practical applications;
- Exchange of information and statistical data available in open sources regularly; and
- Any other form of cooperation as agreed upon by the parties.

## 8. Philippines–United Arab Emirates (PH–UAE)

The Philippines and the United Arab Emirates (UAE) are currently discussing an Energy Transition Cooperation through an MOU. Similarly, both countries will endeavor to cooperate on the following: a) RE, b) LNG as a transition fuel, c) energy efficiency and conservation, and d) alternative fuels and emerging technologies, among others.

## E. Collaboration with International Organizations (IOs) and Development Partners (DPs)

The DOE remains steadfast in strengthening its collaboration with international organizations and other countries to provide the necessary assistance in achieving the country's energy transition targets.

### 1. Foreign-Assisted Projects (FAPs)

**Development for Renewable Energy Applications Mainstreaming and Market Sustainability (DREAMS).** The DOE has been collaborating with the Global Environment Facility (GEF) and the United Nations Development Program (UNDP) to carry out the DREAMS Project from 2016 to 2023. The project was granted USD5.2 million to support its initiatives.

The primary objective of the DREAMS project is to reduce GHG emissions by promoting and commercializing the RE market, while also addressing barriers to investments in RE-based power generation projects. The project has four main components. Through various initiatives under each component, the project significantly contributed to enhancing the RE landscape in the Philippines and therefore achieved its objectives, to wit:

#### Supportive RE Policy Environment

The DREAMS project facilitated the development and approval of the National Renewable Energy Program (NREP) for the period 2020–2040. Through technical expertise and stakeholder engagement, the project contributed to the establishment of a favorable policy framework conducive to RE growth and expansion.

#### Local Institutional Strengthening

Focused on specific provinces, namely Iloilo, Palawan, and Lanao del Sur, this component aimed to build capacity for local RE planning. By empowering local governments and electric cooperatives (ECs) with knowledge and resources, the project facilitated informed decision-making and integration of RE policies into local plans.

#### Capitalized RE Market


The project played a pivotal role in the establishment of the Renewable Energy Registrar (RER) platform, operationalized in 2019. This platform facilitates efficient trading and transactions of RE certificates to increase the RE share in the country's power capacity mix.

#### RE Commercialization

Through the Support Facility for RE (SF4RE), the project funded the installation of 18 local RE projects, showcasing the viability of RE and fostering cooperation among communities, local governments, and ECs. This initiative significantly boosted confidence in RE viability and promoted its widespread adoption.

The DREAMS project made substantial contributions to the promotion and development of RE in the country. By fostering a supportive policy environment, strengthening local institutions, capitalizing the RE market, and promoting RE commercialization, the project has left a lasting impact on the country's efforts to reduce GHG emissions and promote sustainable energy practices. Moving forward, it is imperative to build upon the achievements of the project and continue advancing towards a greener and more sustainable energy future.

While the project concluded its implementation on 31 July 2023, operational and financial closure were completed on 31 December 2023. The final accomplishment report was approved on 28 June 2023 by the DREAMS Project Steering Committee chaired by the DOE, aims to leave a significant impact on the promotion and development of RE in the country.



**Energy Secure Philippines (ESP).** The ESP project, launched on 28 June 2021, is a collaborative effort between the Philippine government and the U.S. government through the U.S. Agency for International Development (USAID). The project's primary objective is to foster inclusive economic growth and strengthen resilience of the energy sector by attracting private investment and deployment of advanced technologies.

To achieve this goal, ESP aims to mobilize USD750 million to catalyze private sector investment in renewables in the country. The project also offers a grant program amounting to USD7.5 million, encouraging collaboration between the private sector and local non-governmental entities to undertake complementary energy projects.

The ESP provides technical support to national and sub-national policy mechanisms and regulatory frameworks, assisting in policy development, and public consultations. Special attention is given to prompting women's participation, with attendance data disaggregated by gender and actively monitored and reported.

The project operates through the Grants Under Contract (GUC) Mechanism, accepting proposals from private entities, academia, and civil organizations for policy and technical studies, innovative technologies, and other relevant areas. The grants cover the following sectors: fishery and agroprocessing, logistics, energy efficiency, and the development of regional knowledge hubs. Gender considerations are integrated into project design and implementation.

Under the GUCs, the ESP facilitates the provision of goods, services, and diverse RE facilities to grantees in specific local government units (LGUs). The goal is to enhance resilience and address women's issues in the energy sector. Examples of projects include the establishment of solar-powered boats and sustainable food facilities.

Capacity building activities are significant components of the project, with an emphasis on increasing the knowledge and skills of national government and LGU partners. Particular attention is given to enhancing women's capacity in technical energy fields, further promoting gender equality and inclusion in the energy sector.

The ESP has been a key partner of the DOE in advancing an energy and climate-resilient sector. The project has made substantial contributions to making the energy sector more resilient through the implementation of the following:

1. Formulation of Department Circular (DC) 2022-06-0028, a supplemental policy on Energy Resiliency Planning and Programming, including enhancing the Resiliency Compliance Plan (RCP) required to be submitted by energy companies;
2. Evaluation of the submitted RCPs of energy companies
3. Development of an Energy Resilience Scorecard (ERS) for RCPs' assessment, an ongoing initiative;
4. Promotion of energy resiliency through the conduct of an Energy Resiliency Forum;
5. Conduct of various capacity-building activities and simulation exercises on energy resiliency;
6. Development of the Cybersecurity Program for the energy sector spanning (2023 to 2025);
7. Establishment of a DOE Command Center/Energy Sector Emergency Operations Center (ESEOC) in 2024; and,
8. Building a solar PV-based Mobile Energy System (MES) for deployment to critical infrastructures in 2024.

Through these initiatives, the ESP has not only catalyzed private investment in RE but also fostered inclusive and sustainable development that prioritizes the needs and interests of local communities, contributing to the overall resilience and stability of the Philippine energy sector.

**Clean Energy Finance and Investment Mobilization (CEFIM).** In partnership with the Organization for Economic Co-operation and Development (OECD), the CEFIM program launched on 13 December 2021, aims to expedite finance and investment for clean energy in the Philippines. Its primary objective is to unlock financial resources and attract

investments to support the country in achieving its clean energy targets and sustainable finance goals. An essential component of the program is the creation of the Clean Energy Finance and Investment Roadmap, which brings together key stakeholders from both the government and private sectors to address barriers to investment and financing of clean energy sources and technologies. Through this roadmap, the program aims to facilitate effective financing solutions, attract investors, and contribute to the country's clean energy transition, thereby aligning with the PEP.

The DOE and OECD organized two workshops – the first workshop took place from 30 May to 1 June 2022, and the second on 24–25 November 2022. These workshops were designed to mobilize funding and generate investment interest, supporting the country's clean energy targets and contributing to the development of the roadmap.

Moreover, the CEFIM program prioritizes implementation support, investor dialogues, and collaboration with ASEAN countries. Its key focus areas include scaling up finance and investment for renewable energy, energy efficiency measures, and the deployment of EVs. The program will also enhance stakeholders' capacity and knowledge through resources such as the Clean Energy Finance and Investment Database and the Clean Energy Finance Training Program. These resources will provide valuable insights into funding trends, financial market expectations, and the development of viable clean energy projects.

## 2. Energy Transition Engagements

**Energy Transition Council (ETC).** The ETC's overall purpose is to enable an effective dialogue between countries that require support for their energy transition on one hand, and the major international actors offering support on the other hand, to find, coordinate, and implement tailored solutions in a range of areas, including integrated energy planning, green grids, and energy efficiency, more rapidly.

The ETC partner countries are being connected through dialogues at senior and working levels, and regional discussions on common issues of developing countries to accelerate their energy transition in the context of a green recovery. Progress is being reported at Ministerial meetings every three to four months.

The ETC's Rapid Response Facility (RRF) has been established, allowing for a group of existing programs and some additional resources to respond rapidly to the requests for technical, commercial, regulatory, and policy assistance arising from political dialogues that cannot be met directly by in-country ETC partners. Since March 2021, the RRF has responded to 24 requests on a wide range of policy areas. The ETC partners have committed almost £10 million (British Pound) of aligned funds for energy transition support through the RRF, including for energy efficiency, grid infrastructure, and energy planning.

To drive the rapid transformational change required in the power sector, the ETC also works with its partner countries to help them access longer-term support and larger amounts of finance through a major international energy transition program. The ETC partners have worked together to prioritize the mobilization of their contributions to these programs as the most effective way of simplifying the landscape of financial and technical support available for developing countries. The RRF serves as a bridge to countries accessing these larger programs, as well as providing direct assistance.

**Southeast Asia Energy Transition Partnership (ETP).** The ETP Program was launched at the 2020 ASEAN Energy Business Forum (AEBF) in November 2020 on the sidelines of the 38th ASEAN Ministers on Energy Meeting (AMEM38) and Associated Meetings. ETP also participates in UK's ETC.

Through a USD 50 million Trust Fund managed by the United Nations Office for Project Services (UNOPS) over a five-year program, the ETP aims to bring together governments and philanthropies to work with partner countries in the region to accelerate the energy transition by financing technical cooperation activities to support such towards modern energy systems that can simultaneously ensure economic growth, energy security, and environmental sustainability. Enabling the transition toward greener energy systems will greatly contribute to the achievement of the UN's Sustainable Development Goals (SDGs) and the Paris Climate Agreement objectives.



The ETP focuses on selected Southeast Asian countries including the Philippines. The ETP provides high-level technical advisory support, holistic support to governments on financing and technical needs, capacity and skill development, and facilitation of dialogues in all related areas. The donors and partners include philanthropies (i.e., Children's Investment Fund Foundation or CIFF, the Ikea Foundation) and government entities (from England, France, Germany, and Canada). The program represents a platform for both types of donors and partners to properly coordinate their efforts in these areas.

**Just Energy Transition (JET).** A multistakeholder consultation was conducted by the UNDP and DOE on 24 October 2022 to discuss policy options and ways forward to reconcile the need for affordable and reliable power to support the country's development goals, while enabling it to meet its Nationally Determined Contribution (NDC) commitment, by way of a socially just transition of the country's energy sector. The consultation supports a process that involves all stakeholders to establish strong institutional frameworks that address the social and economic impacts of the energy transition.

It is hoped that with the leadership of the DOE and the support of various stakeholders within and outside the government, this consultation will provide a starting point for pro-active discussions and learning process on a reform agenda to allow government, policy makers, academics, private sector, and civil society to work together toward low carbon development in the country.

**Energy Transition Mechanism (ETM).** In October 2021, the Philippines was selected to develop an Investment Plan (IP) for Accelerating Coal Transition (ACT) Program under the Climate Investment Funds (CIF) of the Asian Development Bank (ADB). The main objective of the ACT is to tackle key barriers related to governance, people and infrastructure, address funding gaps leading to the successful implementation of country-level strategies and associated kick-start projects; build support at the local and regional levels; and accelerate the retirement of existing coal assets (coal mines and coal power plants) together with enabling new economic activities for those to be affected by the transition.

The ACT looks at supporting both public and private entities with the relevant toolkit necessary to effect the transition. The ACT supports interventions including "soft" investments for government and people, and physical investments in infrastructure. Eligible infrastructure investments include mine closure, plant decommissioning, reclamation and repurposing, repowering with renewable and storage, ancillary services, energy efficiency, and biodiversity.

Two Multilateral Development Banks (MDB) Missions were conducted in partnership with the DOF and DOE in August 2022 and March 2023, purposely to plan the preparation of the IP for access to the CIF ACT window concessional funding.

As an update, the CIF for Clean Technology Fund (CTF) - Trust Fund Committee is currently reviewing the proposal for a 6-month extension on the submission of the country's IP with focus on repurposing of coal power plants.



# List of Policies, Regulations and Quality Standards

## Policies

| Policy No.                                | Title  | Date Issued       |
|---|--|-------------------|
| Administrative Order (AO) 2020-05-0001    | Providing for a COVID-19 Response Protocol in the Energy Sector  | 21 May 2020       |
| AO No. 19                                 | Mandating the Department of Foreign Affairs and the Department of Energy to Organize and Carry Out the Scheduled Activities in Connection with the Philippine Hosting of the Asia-Europe Meeting Conference on the Harmonization of Biofuels Standards and Application to the Vehicle Technologies | 06 September 2011 |
| <b>Conventional Energy</b>                |  |                   |
| Department Circular (DC) No. 2023-12-0033 | Guidelines on the Awarding of Petroleum Service Contracts for Development and Production   | 07 December 2023  |
| Department Order (DO) No. 2022-08-0013    | Designation of Special Technical, Financial, and Legal Advisers Relative to the Upstream Industry  | 25 August 2022    |
| DC2021-09-0028                            | Establishing the Philippine Strategic Petroleum Reserve Program  | 16 September 2021 |
| DC2021-08-0027                            | Prescribing the Guidelines and Procedures for the Approval and Award of Projects Proposed by Service Providers for the Enhancement, Acquisition, Processing, Interpretation, and Marketing of Upstream Petroleum Data in the Philippines   | 18 August 2021    |
| DC2020-04-0010                            | Upstream Petroleum Operations Safety, Health and Environment Rules and Regulations   | 22 April 2020     |
| DC2020-02-0006                            | Rules and Regulations for the Selection, Review, and Approval of Farm-out of PNOC Exploration Corporation (PNOC-EC) Petroleum Service Contracts (PSCs) in Favor of Third Parties and Farm-in of PNOC EC into Existing PSCs   | 13 February 2020  |
| Executive Order (EO) 80                   | Rationalizing the Rules for the Engagement of Third-Party Participants under Petroleum Service Contracts, Repealing for the Purpose Executive Order No. 556 (s. 2006)  | 28 May 2019       |
| DC2018-12-0028                            | Coal Mine Safety and Health Rules and Regulation   | 28 December 2018  |
| DC2018-03-0006                            | Omnibus Rules and Regulations Governing Tax-Exempt Importations for Petroleum Operations under Presidential Decree No. 87, as amended and Coal operations under Presidential Decree No. 972, as amended  | 15 March 2018     |
| DC2017-12-0017                            | Adopting the Philippine Conventional Energy Contracting Program (PCECP) of Awarding Petroleum Service Contracts (PSCs) and Creating the Review and Evaluation Committee (REC)  | 27 December 2017  |
| DC2017-09-0010                            | Adopting the Philippine Conventional Energy Contracting Program (PCECP) of Awarding Coal Operating Contracts (COCs) and Creating the Review and Evaluation Committee (REC)   | 23 September 2017 |
| <b>Downstream Industry</b>                |  |                   |
| DC2023-08-0025                            | Guidelines on the Recognition of Training Organizations for Qualified Service Persons of DOE-Regulated Liquefied Petroleum Gas (LPG) Industry Participants   | 03 August 2023    |
| DC2022-11-0037                            | Guidelines on the Registration and Issuances of License to Operate to Qualified DOE-Regulated LPG Industry Participants and Penalizing Certain Prohibited Acts   | 22 November 2022  |
| DC2022-11-0033                            | Rules of Procedure for Administrative Cases in the Downstream Oil Industry   | 08 November 2022  |
| DC2022-06-0020                            | Implementing the Philippine National Standard Specification for Biofuels-Coconut Methyl Ester (B100), PNS/DOE QS 002:2021  | 20 June 2022      |
| DC2021-09-0029                            | Guidelines on Notices and Reportorial Requirements Pursuant to Downstream Oil Industry Deregulation Act  | 16 September 2021 |
| DC2021-09-0028                            | Establishing the Philippine Strategic Petroleum Reserve Program  | 16 September 2021 |
| DC2021-06-0014                            | Revised Circular on Accreditation and Submission of Notices and Reports by Refiners, Importers and Own Users of Gasoline and Diesel pursuant to Biofuels Act   | 03 June 2021      |
| DC2020-12-0025                            | Implementing the Philippine National Standards Specification for Kerosene (PNS/DOE QS 009:2019)  | 09 December 2020  |
| DC2020-05-0012                            | Guidelines Implementing the Temporary Modification of Import Duty Rates on Crude Petroleum Oil and Refined Petroleum Products as Provided Under Executive Order (EO) No. 113   | 11 May 2020       |
| EO 113                                    | Temporarily Modifying the Rates of Import Duty on Crude Petroleum Oil and Refined Petroleum Products under Section 1611 of Republic Act (RA) No. 10683, Otherwise known as the "Customs Modernization and Tariff Act"  | 02 May 2020       |
| DC2020-03-0007                            | Amending Certain Sections of Department Circulars No. 2007-02-0001 entitled "Guidelines Implementing the Registration of Fuel Additives under RA Nos. 8479 and 8749"   | 26 February 2020  |
| DC2019-06-0009                            | Implementing the Modified Philippine National Standard Specifications for Liquefied Petroleum Gases (PNS/DOE QS 005:2016 and PNS/DOE QS 012:2016)  | 06 June 2019      |

| Policy No.                          | Title   | Date Issued       |
|-------------------------------------|---|-------------------|
| DC2019-05-0008                      | Revised Guidelines for the Monitoring of Prices in the Sale of Petroleum Products by the Downstream Oil Industry in the Philippines   | 28 May 2019       |
| DC2019-05-0006                      | Implementing the Specifications for PNS/DOE QS 004:2017 CMEBlended Automotive Diesel Oil and PNS/DOE QS 013:2017 CMEBlended Industrial Diesel Oil –Specifications   | 15 May 2019       |
| DC2019-02-0005                      | Proper Retention of Duplicate Liquid Petroleum Fuel Samples in Depots and Retail Outlets  | 13 February 2019  |
| DC2019-02-0002                      | Implementing the Specifications for PNS/DOE QS 008:2018, EGasoline Fuel – Specification   | 07 February 2019  |
| DC2019-02-0004                      | Implementing the Natural Gas Quality Standard for all-Natural Gas Supply in the Philip-pines  | 01 February 2019  |
| DC2018-07-0020                      | Prescribing the Guidelines for the Development and Utilization of Small or Sub-Com-mercial Deposits of Natural Marsh Gas or Methane Gas in the Philippines, and Granting Gratuitous Permits Thereof   | 18 July 2018      |
| JAQ No. 01 series of 2018           | Supplementing DOE Department Circular No. 2013-09-0022, entitled Directing All Lique-fied Petroleum Gas Industry Participants to Observe the Minimum Safety Standards in the Transportation and Distribution of LPG in Cylinders                    | 07 May 2018       |
| DC2018-03-0006                      | Omnibus Rules and Regulations Governing Tax-Exempt Importations for Petroleum Operations under Presidential Decree No. 87, as amended and Coal operations under Presidential Decree No. 972, as amended   | 15 March 2018     |
| DC2018-03-0004                      | Prohibiting the Sale and Distribution of Small-sized 2.7 Kg Capacity and Below LPG Cylinders Without the Required "For Outdoor Use Only Marking in Addition to the Usual Mandatory Markings for LPG Cylinders, and for Other Purposes               | 01 February 2018  |
| MC No. 184, s. 2009                 | Directing All Departments, Bureaus, Offices, and Instrumentalities of The Government, Including Government-Owned and Controlled Corporations to use 10 percent by Volume Bioethanol in their Gasoline Requirements                                  | 26 October 2009   |
| MC No. 07-2004                      | Use Of Coconut Methyl Ester (CME) In the Diesel Requirements of The Courts  | 23 June 2004      |
| Memorandum Circular No. 55, s. 2004 | Directing All Departments, Bureaus, Offices, and Instrumentalities of the Government, Including Government-Owned and Controlled Corporations to Incorporate the Use of One Percent (1%) by Volume Coconut Methyl Ester in their Diesel Requirements | 09 February 2004  |
| <b>Renewable Energy</b>             |   |                   |
| DC2023-12-0035                      | Prescribing the Policy and General Framework on the Expanded Roof-Mounted Solar Program in the Philippines  | 14 December 2023  |
| DC2023-12-0032                      | The Rules and Regulations on Administrative Actions for Violations of the Renewable Portfolio Standards (RPS) Rules   | 07 December 2023  |
| DC2023-09-0027                      | Amendment to DC2021-11-0036 titled Providing the Revised Guidelines for the Green Energy Auction Program (GEAP) in the Philippines  | 26 September 2023 |
| DO2023-07-0020                      | Operationalization of the Strengthening of the Solar and Wind Energy Management Divi-sion in accordance with Republic Act No. 9513  | 19 July 2023      |
| DC2023-06-0020                      | Policy and Administrative Framework for the Efficient and Optimal Development of the Country's Offshore Wind (OSW) Resources  | 16 June 2023      |
| DC2023-06-0019                      | Adopting the Guidelines Governing the 4th Open and Competitive Selection Process (OCSP4) in the Award of Renewable Energy Service Contracts (RESC), and for Other Purposes  | 08 June 2023      |
| DC2023-05-0015                      | Prescribing the Amendments to Department Circular No. DC2017- 12-0015 or the Renew-able Portfolio Standards (RPS) Rules for On-Grid Areas   | 23 May 2023       |
| DC2023-05-0014                      | Promulgating the Revised Rules and Guidelines Governing the Operationalization of the RPS for Off-Grid Areas Pursuant to Section 12 of the Renewable Energy (RE) Act of 2008  | 23 May 2023       |
| DC2023-05-0013                      | Implementing Guidelines of Executive Order No. 21   | 18 May 2023       |
| EO No. 21                           | Directing the Establishment of the Policy and Administrative Framework for Offshore Wind Development  | 19 April 2023     |
| DC2022-11-0034                      | Prescribing Amendments to Section 19 of Department Circular No. DC2009-05-0008 Titled Rules and Regulations Implementing RA No. 9513, otherwise known as "The RE Act of 2008"   | 15 November 2022  |
| DC2022-09-0030                      | Prescribing the Adjusted Annual Percentage Increment to be Imposed on All Mandated Participants of the RPS for On-Grid Areas  | 23 September 2022 |
| DC2022-06-0026                      | Adopting Amendments to the RE Market (REM) Rules  | 20 June 2022      |
| DC2022-06-0019                      | Declaring the Interim Commercial Operations of the REM  | 10 June 2022      |
| DC2022-06-0018                      | Adopting the Guidelines and Procedures in the Fund Sourcing, Accounting, and Audit of RE Trust Fund pursuant to Section 28 of the RE Act of 2008  | 10 June 2022      |
| DO2022-02-0003                      | Creation of a Philippine Steering Committee (PSC) and Technical Working Groups (TWG) for RE and Energy Efficiency and Conservation (EEC) Under the Clean Energy Finance and Investment Mobilization (CEFIM) of OECD                                 | 21 February 2022  |
| DC2022-02-0002                      | Prescribing the Policies and Programs to Promote and Enhance the Development of Biomass Waste-to-Energy (WTE) Facilities  | 17 February 2022  |
| DC2021-12-0042                      | Prescribing Amendments to Sections 13(E) and 18(C) of Department Circular No. DC2009-05-0008, Entitled Rules and Regulations Implementing RA No. 9513, otherwise known as "The RE Act of 2008"  | 24 December 2021  |
| DC2021-11-0036                      | Providing the Revised Guidelines for the Green Energy Auction Program in the Philippines  | 03 November 2021  |

| Policy No.               | Title  | Date Issued       |
|--------------------------|--|-------------------|
| DC2021-06-0016           | Geothermal Safety, Health, and Environment Code of Practice  | 11 June 2021      |
| DC2021-06-0017           | Hydropower Safety, Health, and Environment Code of Practice  | 11 June 2021      |
| DC2021-06-0018           | Solar Safety, Health, and Environment Code of Practice   | 11 June 2021      |
| DC2021-06-0019           | Wind Safety, Health, and Environment Code of Practice  | 11 June 2021      |
| DC2021-06-0020           | Biomass and Biofuels Safety, Health, and Environment Code of Practice  | 11 June 2021      |
| DC2020-10-0022           | Prescribing the policies to Enhance the Net-Metering Program for RE Systems.   | 22 October 2020   |
| DC2020-11-0024           | Adopting the Guidelines Governing the 3rd Open and Competitive Selection Process (OCSP3) in the Award of RESC, and for Other Purposes  | 20 October 2020   |
| DC2020-07-0017           | Promulgating the Guidelines Governing the Policy for the Conduct of Green Energy Auction in the Philippines  | 14 July 2020      |
| DC2020-04-0009           | Guidelines Governing the issuance of Operating Permits to RE Suppliers under the Green Energy Option Program   | 22 April 2020     |
| AO NO.23                 | Eliminate overregulation and improve the government system in delivering services to the people  | 21 February 2020  |
| DC2020-02-0005           | Guidelines on the Duty-Free Importation and Monitoring of the Utilization of RE machinery, equipment, materials and spare parts and their transfer and other disposition   | 13 February 2020  |
| DC2019-12-0016           | Promulgating the Renewable Energy Market (REM) Rules   | 04 December 2019  |
| DC2019-10-0013           | Omnibus Guidelines Governing the Awarding and Administration of RE Contracts and the Registration of RE Developers   | 01 October 2019   |
| DO2018-10-0018           | Adopting the Guidelines for the Operationalization of the RETF, and Other Purposes   | 23 October 2018   |
| DC2018-09-0027           | Establishment and Development of Competitive RE Zones (CREZ) in the Country  | 13 September 2018 |
| DC2018-08-0024           | Promulgating the Rules and Guidelines Governing the Establishment of RPS for Off-Grid Areas  | 24 August 2018    |
| DC2018-07-0019           | Promulgating the Rules and Guidelines Governing the Establishment of the Green Energy Option Program pursuant to the RE Act of 2008  | 18 July 2018      |
| DC2017-12-0015           | Promulgating the Rules and Guidelines governing the Establishment of the Renewable Portfolio Standard (RPS) for On-Grid Areas  | 22 December 2017  |
| DO2017-04-0005           | Prescribing the New Guidelines in the Processing of Applications for RE Service/Operating Contracts  | 07 April 2017     |
| DC2007-05-0006           | Rules and Regulations Implementing RA No. 3967   | 17 May 2007       |
| <b>Power Development</b> |  |                   |
| DO2023-10-0023           | Providing Guidance on the Final Transfer of the Remaining DOE Administered Financial Benefits under Energy Regulations No. 1-94 (ER 1-94)  | 10 October 2023   |
| DO2023-10-0022           | Directing the National Electrification Administration to facilitate the Joint Competitive Selection Process for the Power Supply of Electric Cooperatives using Indigenous Natural Gas as Transition Fuel                        | 10 October 2023   |
| DC2023-09-0026           | Declaring the Commercial Operations of the Reserve Market and Providing further Policies   | 20 September 2023 |
| DC2023-08-0024           | Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Manual on Billing and Statement  | 02 August 2023    |
| DC2023-07-0023           | Adopting further Amendments to the WESM Rules and Market Manuals   | 20 July 2023      |
| DC2023-07-0022           | Implementing Guidelines on the Decommissioning and Mothballing of a Generating Plant or Unit Pursuant to Section 2.8 of DOE Department Circular (DC) No. 2010-03-0003  | 17 July 2023      |
| DO2023-07-0021           | amendments to Internal Guidelines and Procedures for the Transfer of Existing Funds in relation to the Financial Benefits under ER 1-94  | 20 July 2023      |
| DC2023-06-0021           | Prescribing the Policy for the Mandatory Conduct of the Competitive Selection Process (CSP) by the Distribution Utilities for the Procurement of Power Supply for their Captive Market   | 30 June 2023      |
| DO2023-06-0018           | Creating the Performance Assessment and Audit Team for the Operations of the Transmission Network Provider and System Operator (PAAT-TNPSO) and Providing for its Responsibilities   | 08 June 2023      |
| DO2023-05-0015           | Enjoining the Energy Regulatory Commission (ERC) and Other Concerned Entities to Ensure Non-Discriminatory Treatment of Generating Facilities Utilizing Liquefied Natural Gas (LNG) in Accordance with their Respective Mandates | 23 May 2023       |
| DC2023-03-0005           | Providing Supplemental Policy for the Systematic Management of DOE Reportorial Requirements for the Electric Power Industry Participants – Distribution Utilities  | 14 March 2023     |
| DC2023-01-0004           | Adopting Amendments to the WESM Rules, Retail Rules and Various Market Manuals, and Promulgation of the Retail Manual on the Procedures for the for the Implementation of Green Energy Option Program (GEOP)                     | 31 January 2023   |
| DC2023-01-0003           | Adopting Further Amendments to the WESM Rules, WESM Manual and Retail Manual on Validation Timeline Adjustment in Metering and Billing   | 12 January 2023   |
| DC2023-01-0001           | Adopting Further Amendments to various WESM Manuals for Improvements to The Market Resource Modelling and Monitoring   | 11 January 2023   |



| Policy No.     | Title  | Date Issued       |
|----------------|--|-------------------|
| DC2022-12-0039 | Declaring the Commercial Operation of the WESM in the Mindanao Grid  | 23 December 2022  |
| DC2022-12-0038 | Adopting Further Amendments to the WESM Market Manual on the Guidelines Governing the Constitutions of the PEM Board Committees  | 21 December 2022  |
| DC2022-12-0016 | Creating the Total Electrification Steering Committee to Accelerate the National Total Electrification   | 21 December 2022  |
| DC2022-11-0032 | Adopting Further Amendments to the WESM Rules and Market Manuals for the Implementation of Reserve Market  | 07 November 2022  |
| DC2022-07-0029 | Providing Policies for the Market Operator Performance Standards   | 20 June 2022      |
| DC2022-06-0025 | Adopting Further Amendments to the WESM Market Manual on Billing and Settlement  | 20 June 2022      |
| DC2022-06-0022 | Adopting Further Amendments to the WESM Manual on Registration, Suspension and De-Registration Criteria and Procedures (RSDCP)   | 20 June 2022      |
| DC2022-06-0023 | Adopting General Amendments to the WESM Rules and Various Market Manuals on the Enhancements to Market Operator and System Operator Procedures   | 20 June 2022      |
| DC2022-06-0024 | Adopting Further Amendments to the WESM and its Market Manual on Constraint Violation Coefficients (CVC) and Pricing Re-Runs (PR)  | 20 June 2022      |
| DC2022-06-0027 | Providing the Guidelines for the Accreditation of Third-party Auctioneer Pursuant to Section 5 of Department Circular No. DC2021-09-0030   | 20 June 2022      |
| DC2022-06-0021 | Adopting Further Amendments to the WESM Rules and Market Manual on Dispute Resolution Administration (DRA)   | 20 June 2022      |
| DC2022-05-0016 | Adopting and Integrating the Policies and Programs for the Graduation and Rationalization of the Universal Charge for Missionary Electrification Subsidy Pursuant to Department Circular No. DC2019-01-0001  | 24 May 2022       |
| DC2022-05-0015 | Supplementing Department Circular No. DC2021-06-0013 on the Framework Governing the Test and Commissioning of Generation Facilities for Ensuring Readiness to Deliver Energy to the Grid or Distribution Network   | 20 May 2022       |
| DC2022-05-0014 | Amending Department Circular No. DC2020-01-0001 on Rules Governing the Review and Evaluation of Direct Connection Applications of Industrial, Commercial and Other Electricity End-Users   | 14 May 2022       |
| DC2022-03-0012 | Adopting Further Amendments to the WESM Rules, Retail and Market Manual (Provisions for Audit and Performance Monitoring)  | 25 March 2022     |
| DC2022-03-0011 | Adopting Further Amendments to the WESM Rules and its Market Manual on Information Disclosure and Confidentiality  | 22 March 2022     |
| DC2022-03-0010 | Adopting Further Amendments to the Market Manual on Registration, Suspension and De-Registration Criteria and Procedures to clarify Bilateral Contracts Accounted for in Settlements   | 17 March 2022     |
| DC2022-03-0009 | Adopting Further Amendments to the WESM Rules and WESM Registration Manual (Provision for De-Registration and Cessation of Registration)   | 17 March 2022     |
| DC2022-03-0003 | Adopting Further Amendments to the WESM Rules and its Market Manual on Billing and Settlement for the Implementation of Enhancements to WESM Design and Operations   | 01 March 2022     |
| DC2022-02-0001 | Providing Policies for the Systematic Management of the DOE Reportorial Requirements for the Electric Power Industry Participants  | 08 February 2022  |
| DC2021-12-0041 | Adopting Further Amendments to the WESM Rules and Market Manual on WESM Compliance Officers (WCO) Certification and Registration   | 21 December 2021  |
| DC2021-12-0040 | Amending Certain Provisions of Annex "A" of Department Circular No. DC2021-06-0015 Entitled "Declaring the Commercial Operations of Enhanced WESM Design and Providing Further Policies"   | 21 December 2021  |
| DC2021-11-0038 | Amending Certain Provisions Department Circular No. DC2021-03-0007 Entitled "Adopting Further Amendments to the WESM Rules and Market Manual on the Management of Net Settlements Surplus (Harmonization with ERC Resolution No. 07 Series of 2019)"             | 09 November 2021  |
| DC2021-10-0031 | Prescribing the Policy for the Transparent and Efficient Procurement of Ancillary Services by the System Operator  | 04 October 2021   |
| DC2021-09-0030 | Amending Certain Provisions of and Supplementing Department Circular No. 2018- 02-0003 on the CSP in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market  | 24 September 2021 |
| DC2021-08-0026 | Adopting Further Amendments to the WESM Rules and its Market Manuals for the Implementation of Enhancements to WESM Design and Operations  | 30 July 2021      |
| DC2021-08-0025 | Providing Policies for the Adoption of the WESM Penalty Manual for the Implementation of Enhancements to WESM Design and Operations  | 30 July 2021      |
| DC2021-07-0024 | Adopting Further Amendments to the WESM Rules for the Operation of the REM   | 09 July 2021      |
| DC2021-07-0022 | Adopting Further Amendments to the WESM Market Manuals on Constraint Violation Coefficients and Pricing Re-Runs for the Implementation of Enhancements to WESM Design and Operations (Provisions for Self-Scheduled Generation)                                  | 25 June 2021      |
| DC2021-07-0021 | Adopting Further Amendments to the WESM Rules and Market Manuals on Metering for the Implementation of Enhancements to WESM Design and Operations (Provisions for Metering Services Provider Performance, Metering Standards and Site-Specific Loss Adjustments) | 25 June 2021      |

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|----------------|--|------------------|
| DC2021-11-0039 | Mandating the National Transmission Corporation as Small System Operator in Specific Off-Grid Areas  | 09 November 2021 |
| DC2021-06-0015 | Declaring the Commercial Operations of the Enhanced WESM Design and Providing Further Policies   | 25 June 2021     |
| DC2021-06-0013 | Adopting a General Framework Governing the Test and Commissioning of Generation Facilities for Ensuring Readiness to Deliver Energy to the Grid or Distribution Network  | 03 June 2021     |
| DC2021-06-0012 | Adopting Further Amendments to the WESM Rules, Retail Rules and Various Market Manuals for the Implementation of Enhancements to WESM Design and Operations (Provisions to portion in Retail Competition)  | 03 June 2021     |
| DC2021-03-0009 | Adopting a General Framework Governing the Operationalization of the Reserve Market in the WESM and Providing further Policies to Supplement DC2019-12-0018  | 17 March 2021    |
| DC2021-03-0008 | Adopting Further Amendments to the WESM Market Manuals for the Implementation of Policy and Framework Governing the Operations of Embedded Generators  | 16 March 2021    |
| DC2021-03-0007 | Adopting Further Amendments to the WESM Market Manual on Management of Net Settlement Surplus  | 16 March 2021    |
| DC2021-03-0004 | Adopting Further Amendments to the WESM Rules and Market Manual on Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units for the Implementation of Enhancements to WESM Design and Operations  | 16 March 2021    |
| DC2021-03-0005 | Adopting Further Amendments to the WESM Market Manual on Load Forecasting Methodology for the Implementation of Enhancements to WESM Design and Operations   | 16 March 2021    |
| DC2021-03-0006 | Adopting Further Amendments to the WESM Market Manual on Dispatch Protocol for the Implementation of Enhancements to WESM Design and Operations  | 16 March 2021    |
| DC2021-03-0003 | Prescribing the Policy and Guidelines for the Formulation of the Distribution Utilities Distribution Development Plan Integrating the Relevant Laws, Policy Issuances, Rules and Regulations   | 02 March 2021    |
| DC2021-02-0002 | Adopting the WESM Industry Code of Ethics  | 24 February 2021 |
| DO2020-12-0014 | Designating the Members of the National Government Technical Working Group on the Privatization of the Agus-Pulangi Hydropower Complex and Other Power Related Issues in the Bangsamoro Region   | 09 December 2020 |
| DC2020-10-0020 | Adopting Further Amendments to the WESM Markets Manual on Dispatch Protocol for the Implementation of Enhancements to WESM Design and Operations (Provisions for the WESM Timetable)   | 06 October 2020  |
| DC2020-10-0019 | Adopting Further Amendments to the WESM Rules and Market Manual on Registration, Suspension and De-registration, and Market Network Model Development and Maintenance for the Implementation of Enhancements to WESM Design and Operations (Provisions for the New Load Facility of a Registered WESM Member)  | 06 October 2020  |
| DO2020-06-0009 | Organizing the Creation and Composition of the Ancillary Services – Technical Working Group  | 23 June 2020     |
| DC2020-06-0014 | Adopting Further Amendments to the WESM Rules and Market Manual on Billing and Settlement for the Implementation of Enhancements to WESM Design and Operations (Provisions for Prudential Requirements)  | 02 June 2020     |
| DC2020-06-0013 | Adopting Further Amendments to the WESM Rules and Market Manual on Registration, Suspension and De-registration Criteria and Procedures for the Implementation of Enhancements to WESM Design and Operations (Provisions for Registration of New Facility and Harmonization with the RA No.11234 entitled 'An Act Establishing the Energy Virtual One-Stop Shop) | 01 June 2020     |
| DC2020-05-0011 | Supplementing Department Circular No. DC2019-12-0018 by Including the National Transmission Corporation in the Membership of the Ancillary Services – Technical Working Group  | 11 May 2020      |
| DC2020-04-0008 | Rationalizing the Utilization of ER 1-94 by LGUs in Response to COVID-19 Public Health Emergency   | 06 April 2020    |
| DC2020-02-0004 | Providing Guidelines on the Planned Outage Schedules of Power Plants and Transmission Facilities and the Public Posting of the Grid Operating and Maintenance Program  | 06 February 2020 |
| DC2020-02-0003 | Providing a National Smart Grid Policy Framework for the Philippine Electric Power Industry and Roadmap for Distribution Utilities   | 06 February 2020 |
| DC2020-02-0002 | The Implementing Rules and Regulations (IRR) of RA No. 11361, otherwise known as the 'Anti-Obstruction of Power Lines Act  | 06 February 2020 |
| DC2020-01-0001 | Prescribing the Rules Governing the Review and Evaluation of Direct Connection Applications of Industrial, Commercial and Other Electricity End-Users  | 09 January 2020  |
| DC2019-12-0017 | Adopting Further Amendments to the WESM Rules and Market Manual on Guidelines on Significant Variations In and between Trading Intervals to Refine Publication Procedures  | 04 December 2019 |
| DC2019-12-0018 | Adopting a General Framework Governing the Provision and Utilization of Ancillary Services in the Grid   | 04 December 2019 |
| DC2019-11-0015 | Prescribing Revised Guidelines for Qualified Third Party (QTP)   | 22 November 2019 |
| DC2019-08-0012 | Providing a Framework for Energy Storage System in the Electric Power Industry   | 01 August 2019   |
| DC2019-07-0011 | Amending Various Issuances on the Implementation of the Retail Competition and Open Access (RCOA)  | 29 July 2019     |

| Policy No.     | Title  | Date Issued      |
|----------------|--|------------------|
| DC2019-06-0010 | Prescribing the Administrative Operating Guidelines for the Availment and Utilization of Financial Benefits by the Indigenous Cultural Communities/Indigenous Peoples pursuant to the DOE Department Circular No. DC2018-03-0005   | 14 June 2019     |
| DC2019-02-0003 | Providing for the Framework Governing the Operations of Embedded Generators  | 08 February 2019 |
| DC2019-01-0001 | Prescribing the Omnibus Guidelines on Enhancing Off-Grid Power Development and Operation   | 25 January 2019  |
| DC2018-09-0026 | Adopting Framework for Uniform Monthly Electricity Bill Format.  | 24 August 2018   |
| DC2018-06-0017 | Adopting Further Amendments to the WESM Rules and Market Manuals (Transitory Provisions for the Implementation of WESM in Mindanao)  | 26 June 2018     |
| DC2018-05-0010 | Creation of a Task Force to Ensure Access to Electricity for the Communities that Remain Unserved and Underserved by Distribution Utilities  | 24 May 2018      |
| DC2018-05-0015 | Adopting Further Amendments to the WESM Rules and Market Manuals for the Implementation of Enhancements to WESM Design and Operations (Provisions for Metering, Market Trading Node and Scheduling Point)  | 16 May 2018      |
| DC2018-04-0012 | Adopting Further Amendments to the WESM Market Manuals on Price Determination Methodology and Constraint Violation Coefficients and Pricing Re-Run for the Implementation of Enhancements to WESM Design and Operations  | 28 March 2018    |
| DC2018-04-0011 | Adopting Further Amendments to the WESM Market Manual on Market Operator Information Disclosure and Confidentiality for the Implementation of Enhancements to WESM Design and Operations   | 28 March 2018    |
| DC2018-04-0010 | Adopting Further Amendments to the WESM Rules, Retail and Retail Market Manual on Metering for Clarifications on Retail Market Integration   | 28 March 2018    |
| DC2018-04-0009 | Adopting Further Amendments to the Retail Rules and Its Market Manual on Metering Standards and Procedures for the Implementation of Enhancements to WESM Design and Operations  | 28 March 2018    |
| DC2018-04-0008 | Adopting Further Amendments to the WESM Market Manuals on Billing and Settlement and Load Forecasting Methodology for the Implementation of Enhancements to WESM Design and Operations   | 28 March 2018    |
| DC2018-04-0007 | Adopting Further Amendments to the WESM Rules and Market Manual on Dispatch Protocol for the Implementation of Enhancements to WESM Design and Operations  | 28 March 2018    |
| DC2018-03-0005 | Prescribing the Guidelines Recognizing the Rights of Indigenous Cultural Communities (ICCs)/Indigenous Peoples (IPs) in their Ancestral Domains and Access to the Financial Benefits as Host Communities under the ER 1-94 Program and Rule 29 (A) of the IRR of RA No. 9136, Otherwise Known as, "Electric Power Industry Reform Act of 2001" | 09 February 2018 |
| DC2018-02-0003 | Adopting and Prescribing the Policy for the CSP in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market  | 01 February 2018 |
| DC2018-01-0001 | Adoption of Energy Resiliency in the Planning and Programming of the Energy Sector to Mitigate the Potential Impacts of Disasters  | 17 January 2018  |
| DC2018-01-0002 | Adopting Policies for the Effective and Efficient Transition to the Independent Market Operator for the WESM   | 17 January 2018  |
| DC2017-12-0016 | Adopting the Guidelines for the Performance Assessment and Audit of All Power Generation, Transmission and Distribution Systems and Facilities   | 28 December 2017 |
| DC2017-12-0006 | Adopting the Guidelines for the Performance Assessment and Audit of All Power Generation, Transmission, and Distribution System and Facilities   | 28 December 2017 |
| DC2017-12-0015 | Promulgating the Rules and Guidelines Governing the Establishment of the RPS for On-Grid Areas   | 22 December 2017 |
| DC2017-12-0014 | Providing Policies on the Implementation of Retail Competition and Open Access (RCOA) for Retail Electricity Suppliers (RES) in the Philippine Electric Power Industry   | 29 November 2017 |
| DC2017-12-0013 | Providing Policies on the Implementation of Retail Competition and Open Access (RCOA) for Contestable Customers in the Philippines Electric Power Industry   | 29 November 2017 |
| DC2017-05-0009 | Declaring the Launch of the WESM in Mindanao and Providing for Transition Guidelines   | 04 May 2017      |
| DC2017-05-0008 | Providing for the Policies and Guidelines on the Conduct of Performance Assessment and Audit for All Power Generation, Transmission and Distribution Systems and Facilities  | 03 May 2017      |
| DC2017-04-0007 | Adopting the WESM Market Manual on Dispatch Protocol and Its Further Amendments  | 20 April 2017    |
| DC2017-04-0006 | Adopting Further Amendments to the WESM Rules and Market Manuals   | 20 April 2017    |
| DC2017-04-0005 | Adopting the WESM Market Manual on the Management of Net settlement Surplus and its Further Amendments   | 20 April 2017    |
| DC2017-04-0004 | Adopting Further Amendments to the WESM Rules and Market Manual (Provisions on Registration)   | 20 April 2017    |
| DC2017-04-0003 | Adopting the WESM Market Manual on Guidelines Governing the Constitution of PEM Board Committees and its Further Amendments  | 20 April 2017    |
| DC2017-03-0002 | Adopting the various WESM market manuals and their further amendments for the implementation of must dispatch and Priority Dispatch Generating Units in the WESM   | 20 March 2017    |
| DC2016-10-0014 | Adopting Further Amendments to the WESM Rules (Enhancements to WESM Design and Operations)   | 14 October 2016  |

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|---|---|-------------------|
| DC2013-09-0023  | Declaring the Launch of the Interim Mindanao Electricity Market (IMEM) and Terms and Conditions for the Commencement of the Full Commercial Operations of the IMEM  | 24 September 2013 |
| Joint Resolution No. 1, s. 2015   | A Resolution Enjoining All Distribution Utilities to Conduct CSP in the Procurement of Supply for their Captive Market  | 20 October 2015   |
| Joint Resolution No. 1, s. 2014   | Extension of Interim Offer Price Cap in the WESM  | 26 March 2014     |
| Joint Resolution No. 2, s. 2014   | Adjustment to the WESM Offer Price Cap  | 27 December 2013  |
| <b>Energy Efficiency and Conservation</b>   |   |                   |
| AO No. 15   | Directing the Accelerated Implementation of the Government Energy Management Program (GEMP)   | 16 January 2024   |
| DC2023-12-0038  | Reclassifying Designated Establishments in the Transport Sector, adjusting their Threshold, and Providing Compliance Guidelines Therefor Pursuant to the Energy Efficiency and Conservation (EEC) Act   | 18 December 2023  |
| DC2023-12-0037  | Reclassifying Designated Establishments in the Industrial Sector, adjusting their Threshold and Providing Compliance Guidelines Therefor Pursuant to the EEC Act  | 18 December 2023  |
| DC2023-12-0036  | Reclassifying Designated Establishments in the Commercial Sector, adjusting their Threshold and Providing Compliance Guidelines Therefor Pursuant to the EEC Act  | 18 December 2023  |
| DC2023-12-0034  | Guidelines on the Authorization of Energy Auditors under the Government Energy Management Program (GEMP)  | 07 December 2023  |
| DC2023-11-0031  | Guidelines on the Awarding of Service Contracts for the Exploration, Development and Production of Native Hydrogen  | 09 November 2023  |
| DC2023-10-0030  | Guidelines on Energy Efficiency Excellence Awards   | 27 October 2023   |
| DO2023-10-0024  | Guidelines on the E-Bike Program of the Department of Energy  | 23 October 2023   |
| Inter-Agency Energy Efficiency and Conservation Committee (IAEECC) Resolution No. 9 | Inclusion of the Climate Change Commission (CCC) as a Regular Resource Institution in the IAEECC in an Advisory Capacity to Harmonize the Approval and Implementation of Government Energy Efficiency Projects (GEEPS) classified as Climate Change Expenditures  | 20 July 2023      |
| IAEECC Resolution No. 8   | Encouraging All Government Entities (GES) to Install and Utilize Solar Photovoltaic (PV) System or any Equivalent Renewable Energy Technology in their Government-Owned Facilities and/or Office Buildings in a Form of Self-Generating Facility, Distributed Energy Resources (DER), or Net Metering Agreement with Host Distribution Utility (DU) | 20 July 2023      |
| IAEECC Resolution No. 7   | Encouraging the Adoption of Flexible Work Arrangements for All Government Entities as Part of the Government's EEC Measures Under the Government Energy Management Program (GEMP)   | 25 May 2023       |
| DC2023-05-0018  | Adoption of the National Energy Efficiency and Conservation Plan (NEECP) and Roadmap 2023-2050  | 25 May 2023       |
| DC2023-05-0017  | Prescribing the Guidelines on the Philippine Transport Vehicles Fuel Economy Labeling Program (VFELP) for Compliance of Vehicle Manufacturers, Importers, Distributors, Dealers, and Rebuilders   | 23 May 2023       |
| DC2023-05-0016  | Prescribing the Fuel Economy Performance Rating (FEPR) Guidelines on Road Transport Vehicles Under the Philippine Transport Vehicles Fuel Economy Labeling Program (VFELP) for Compliance of Vehicle Manufacturers, Importers, Distributors, Dealers, and Rebuilders  | 23 May 2023       |
| DC2022-11-0035  | Expanding the Coverage of the Philippine Energy Labelling Program (PELP) for the Compliance of Importers, Manufacturers, Distributors, Dealers and Retailers of Energy Consuming Products (ECPs)  | 21 November 2022  |
| IRR of RA No. 11697   | IRR of RA No. 11697 of the Electric Vehicle Industry Development Act  | 02 September 2022 |
| DC2022-04-0013  | Adopting of Certification Guidelines for Energy Audit Conducted by Firm, Partnership, Corporation, and Sole Proprietorship (FPCSP)  | 05 April 2022     |
| IAEECC Resolution No. 6   | Recommending to the Governance Commission for the Government-Owned or -Controlled Corporations (GCCG) to Consider, Include, and Adopt EEC as One of the Criteria in the Performance Evaluation System for Government-Owned or -Controlled Corporations (GOCCs) in the Grant of Performance-Based Incentives   | 04 April 2022     |
| DC2022-03-0008  | Adoption of Training Regulations and Prescribing Certification Process for Training Institutions and Energy Managers (EMs)  | 17 March 2022     |
| DC2022-03-0007  | Adoption of Training Regulations for the Certification of Energy Conservation Officers (ECOs)   | 17 March 2022     |
| DC2022-03-0006  | Adoption of Training Regulations Certification Process for Energy Auditors (EAs)  | 17 March 2022     |
| 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                           | 10 March 2022     |
| DC2022-03-0004  | Guidelines for the Endorsement of Energy Efficiency Strategic Investments to the Board of Investments for Fiscal Incentives   | 03 March 2022     |
| IAEECC Resolution No. 5   | Directing All Government Entities (GEs), including the Local Government Units (LGUs) and Foreign Service Posts to Observe the Approved Government Energy Management Program (GEMP) Guidelines   | 11 February 2022  |



| Policy No.                              | Title  | Date Issued       |
|---|--|-------------------|
| IAEECC Resolution No. 4                 | Enjoining the Council of Good Local Governance to Consider, Include and Adopt the EEC as one of the Areas in the Criteria per Section 7 of RA No. 11292 - "The Seal of Good Local Governance Act of 2019"  | 16 December 2021  |
| IAEECC Resolution No. 3                 | Directing All Government Entities, Including the Local Government Units (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 Government Energy Management Program (GEMP) | 07 October 2021   |
| DC2021-07-0023                          | Providing for a Policy Framework on the guidelines for the Development, Establishment and Operation of Electric Vehicle Charging Stations (ECVS) in the Philippines  | 09 July 2021      |
| IAEECC Resolution No. 2                 | 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)  | 17 June 2021      |
| DC2021-05-0011                          | Guidelines for the Endorsement of Energy Efficiency Projects to the Board of Investments for Fiscal Incentives   | 11 May 2021       |
| PELP IG AC                              | Implementing Guidelines for the Philippine Energy Labeling Program for Air Conditioners  | 11 May 2021       |
| PELP IG REF                             | Implementing Guidelines for the Philippine Energy Labeling Program for Refrigerating Appliances  | 11 May 2021       |
| PELP IG TV                              | Implementing Guidelines for the Philippine Energy Labeling Program for Television Sets.  | 11 May 2021       |
| PELP IG LIGHT                           | Implementing Guidelines for the Philippine Energy Labeling Program for Lighting Products   | 11 May 2021       |
| PELP REMVCM                             | Implementing Guidelines for the Philippine Energy Labeling Program on Registration, Enforcement, Monitoring, Verification, and Compliance Mechanism  | 11 May 2021       |
| DC2021-01-0001                          | Guidelines for the Qualifications, Assessment, Registration and Certification of Energy Conservation Officers (CECO), Energy Managers (CEM) and Energy Auditors (EA)   | 11 January 2021   |
| DC2020-12-0026                          | Adoption of the Guidelines on Energy Conserving Design of Building   | 22 December 2020  |
| IAEECC Resolution No.1                  | 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   | 24 October 2020   |
| DC2020-10-0023                          | Prescribing Policy Framework for the Development of the Fuel Economy Rating, Fuel Economy Performance, and Related EEC Policies for the Transport Sector and other Support Infrastructures   | 22 October 2020   |
| DC2020-09-0018                          | Guidelines in the Administration, Classification and Certification of Energy Service Company (ESCO)  | 09 September 2020 |
| DO2020-06-0009                          | Organizing the Creation and Composition of the Ancillary Services-Technical Working Group  | 23 June 2020      |
| 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 (ECP)   | 15 June 2020      |
| 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)  | 15 June 2020      |
| Memorandum Circular (MC) 2020-05-0001   | Directing All Designated Establishments under Commercial, Industrial and Transport Sectors to Submit Energy Consumption Reports  | 13 May 2020       |
| MC2020-082                              | Guidelines in Implementing RA No. 11285 or the EEC Act and its IRR   | 09 May 2020       |
| DO2020-01-0002                          | Operationalization of the Strengthening of the Energy Utilization Management Bureau (EUMB), Support Services and Field Offices in Accordance with RA No. 11285 or the EEC Act  | 28 January 2020   |
| DC2020-01-0001                          | Prescribing the Rules Governing the Review and Evaluation of Direct Connection Applications of Industrial, Commercial, and other Electricity End-users   | 09 January 2020   |
| DO2020-01-0001                          | Organizing the Inter-Agency EEC Committee  | 09 January 2020   |
| DC2019-11-0014                          | IRR of RA No. 11285 (EEC Act)  | 22 November 2019  |
| DC2016-04-0005                          | Declaring the Compliance of Importers, Manufacturers, Distributors and Dealers of Electrical Appliances and Other Energy-Consuming Products with the Philippine Energy Standards and Labelling Program (PESLP) as a Policy of the Government   | 28 April 2016     |
| IRR of GEMP                             | IRR Directing the Institutionalization of a Government Energy Management program (GEMP)  | 30 May 2008       |
| AO No.183, s. 2007                      | Directing the Use of Energy Efficient Lighting Systems (EELS) in the Government Facilities (Palit-ilaw Program)  | 09 July 2007      |
| AO No. 110, s. 2004                     | Directing the Institutionalization of a Government Energy Management Program (GEMP)  | 25 October 2004   |
| <b>Alternative Fuels and Technology</b> |  |                   |
| DC2023-05-0016                          | Prescribing the Fuel Economy Performance Rating (FEPR) Guidelines on Road Transport Vehicles Under the Philippine Transport Vehicles Fuel Economy Labeling Program (VFELP) for Compliance of Vehicle Manufacturers, Importers, Distributors, Dealers, and Rebuilders   | 23 May 2023       |
| DC2023-05-0010                          | Guidelines on the Unbundling of EVCS Charging Fee pursuant to the EVIDA  | 12 May 2023       |

| Policy No.  | Title   | Date Issued      |
|---|---|------------------|
| DC2023-05-0011  | Guidelines on the Accreditation of EVCS Providers and Registration of EVCS pursuant to the EVIDA  | 12 May 2023      |
| DC2023-05-0012  | Guidelines on the Electric Vehicle (EV) Recognition and Adoption of EV Standard Classification on Road Transport for Incentive Eligibility. Pursuant to the EVIDA   | 12 May 2023      |
| DC2020-10-0023  | Prescribing Policy Framework for the Development of the Fuel Economy Rating, Fuel Economy Performance, and Related EEC Policies for the Transport Sector and other Support Infrastructures  | 22 October 2020  |
| D02019-07-0015  | Creation of the Special Financial Audit Team for the Alternative Fuels (AF) under the Natural Gas Vehicle Program for Public Transport (NGVPPT)   | 18 July 2019     |
| Joint Administration Order (JAO) No. 1 Series of 2016 | Creating the Technical Working Group (TWG) on the Use of Auto LPG as Fuel for Public Transport and for Other Related Purposes   | 15 October 2016  |
| <b>Quality Management System</b>                      |   |                  |
| D02023-01-0006  | Strengthening the Implementation of the ISO 9001:2015 Quality Management System Standard Certification of the Department of Energy  | 30 January 2023  |
| <b>Energy Resiliency</b>                              |   |                  |
| DC2023-01-0002  | Adoption of the National Energy Contingency Plan for the "The Big One"  | 11 January 2023  |
| DC2022-06-0028  | Supplementing Department Circular No. DC2018-01-0001 on the Energy Resiliency Planning and Programming of the Energy Sector and on Task Force on Energy Resiliency (TFER) Functions and Structure to Mitigate Impacts of Disasters.   | 24 June 2022     |
| D02022-01-0001  | Designation of DOE Representatives to the Task Force on Energy Resiliency (TFER) as Provided in Department Circular No. DC2018-01-0001 entitled "Adoption of Energy Resiliency in the Planning and Programming of the Energy Sector to Mitigate Potential Impacts of Disasters" | 21 January 2022  |
| <b>Energy Data and Research</b>                       |   |                  |
| D02022-11-0015  | Creation of a Technical Working Group (TWG) for the Development of Socio-and Techno-Economic Assumptions and Parameters (STEAPs) for the Philippine Energy Plan and Other Energy Related Research and Studies   | 18 November 2022 |
| D02022-08-0011  | Department of Energy (DOE) Priority Research and Policy Areas for the Philippine Energy Research and Policy Institute (PERPI)   | 10 August 2022   |
| D02022-05-0007  | Guidelines on the Implementation of Department of Energy Data Privacy and Information Security Systems and Solutions and Creation of the Data Privacy Committee, Data Breach Response Team and Data Protection Team   | 10 May 2022      |
| <b>Nuclear Energy</b>                                 |   |                  |
| E0116   | Directing a Study for the Adoption of a National Position on Nuclear Energy Program, constituting a Nuclear Energy Program Inter-Agency Committee, and for Other Purposes"  | 24 July 2020     |
| <b>Energy Projects</b>                                |   |                  |
| DILG-DOE Joint Memorandum Circular No. 2020-01        | Guidelines for LGUs to Facilitate the Implementation of Energy Projects   | 30 April 2020    |
| DC2019 05-0007  | Rules and Regulations Implementing RA No. 11234 (Energy Virtual One-Stop Shop Act)  | 28 May 2019      |
| DC2018-04-0013  | IRR of EO 30, series of 2017, Creating the Energy Investment Coordinating Council in Order to Streamline the Regulatory Procedures Affecting Energy Projects  | 25 April 2018    |

## Regulations

| Regulation                          | Title   | Date Issued      |
|-------------------------------------|---|------------------|
| <b>Creating Wealth for Filipino</b> |   |                  |
| Republic Act (RA) 11310             | An Act Institutionalizing the Pantawid Pamilyang Pilipino Program (4Ps) | 17 April 2019    |
| RA 7042                             | Foreign Investments Act of 1991   | 13 June 1991     |
| <b>Conventional Energy</b>          |   |                  |
| RA 11054                            | Organic Law for the Bangsamoro Autonomous Region in Muslim Mindanao     | 27 July 2018     |
| <b>Renewable Energy</b>             |   |                  |
| RA 9513                             | Renewable Energy Act of 2008  | 16 December 2008 |
| RA 9367                             | Biofuels Act of 2006  | 12 January 2007  |
| RA 9275                             | Philippine Clean Water Act of 2004                                      | 22 March 2004    |
| <b>Downstream Oil</b>               |   |                  |
| RA 8479                             | Downstream Oil Industry Deregulation Act of 1998                        | 10 February 1998 |

| Regulation   | Title  | Date Issued      |
|--|--|------------------|
| Regulation   | Title  | Date Issued      |
| RA 11592   | Liquefied Petroleum Gas (LPG) Industry Regulation Act  | 14 October 2021  |
| <b>Power Development</b>   |  |                  |
| RA 11552   | An Act Extending and Enhancing the Implementation of the Lifeline Rate, amending for the Purpose Section 73 of RA 9136, otherwise known as the "Electric Power Industry Reform Act (EPIRA) of 2001", as amended by RA 10150  | 27 May 2021      |
| RA 11234   | Energy Virtual One-Stop Shop (EVOSS) Act   | 08 March 2019    |
| RA 9136  | EPIRA of 2001  | 08 June 2001     |
| <b>Energy Efficiency and Conservation</b>                                    |  |                  |
| RA 11393   | Advanced Energy and Green Building Technologies Curriculum Act   | 22 August 2019   |
| RA 11285   | EEC Act  | 12 April 2019    |
| <b>Alternative Fuels and Energy Technology</b>                               |  |                  |
| RA 11534   | An Act Reforming the Corporate Income Tax and Incentives System, amending for the Purpose Sections 20, 22, 25, 27, 28, 29, 34, 40, 67, 109, 116, 204 and 290 of the National Internal Revenue Code Of 1997, As Amended, And Creating Therein New Title XIII, And for Other Purposes  | 26 March 2021    |
| RA 10963   | An Act Amending Sections 5, 6, 26, 27, 31, 32, 34, 51, 52, 56, 57, 58, 74, 79, 84, 86, 90, 91, 99, 100, 101, 106, 107, 108, 109, 110, 112, 114, 116, 127, 128, 129, 145, 148, 149, 151, 155, 171, 174, 177, 178, 179, 180, 181, 182, 183, 186, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 232, 236, 237, 249, 254, 264, 269, and 288. Creating New Sections 50-A, 148-A, 150-A, 150-B, 237-A, 264-A, 264-B, and 265-A; and Repealing Sections 35, 62 and 89: All Under RA No. 8424 Otherwise known as the National Internal Revenue Code of 1997, as Amended and for Other Purposes | 19 December 2017 |
| <b>Collaboration with the Attached Agencies</b>                              |  |                  |
| RA 1053  | National Electrification Administration (NEA) Reform Act of 2013   | 07 May 2013      |
| RA 7638  | Department of Energy (DOE) Act of 1992   | 09 December 1992 |
| <b>Promoting Energy Security Through Clean Energy Fuels and Technologies</b> |  |                  |
| RA 11203   | An Act Liberalizing the Importation, Exportation and Trading of Rice, Lifting for the Purpose the Quantitative Import Restriction on Rice, and For Other Purposes  | 14 February 2019 |
| <b>Climate Preservation</b>  |  |                  |
| RA 6969  | Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990  | 26 October 1990  |

## Quality Standards

| Title   | Description   | Date Issued      |
|---|---|------------------|
| <b>Product Quality Standards</b>  |   |                  |
| <b>I. Biofuels and Biofuels Blend</b>   |   |                  |
| Philippine National Standard (PNS)/DOE Quality Standard (QS) 002:2021 – Biofuels [Coconut Methyl Ester (CME) B100 Specification | This standard specifies the requirements for CME (B100) suitable for blending to diesel fuel for use in various types of compression ignition engines and other similar types of engines. | 27 December 2021 |
| PNS/DOE QS 015:2021 – Petroleum Products [CME] blended Automotive Diesel Oil (ADOB3)- Specification                             | This standard addresses the technical requirement of automotive diesel oil containing 3% v/v CME or CME-blended automotive diesel oil (ADOB3) and suitable test methods.                  | 27 December 2021 |
| PNS/DOE QS 016:2021 – Petroleum Products – CME-Blended Industrial Diesel Oil (IDOB3) – Specification                            | This standard addresses the technical requirement of industrial diesel oil containing 3% v/v CME or CME-blended industrial diesel oil (ADOB3) and suitable test methods.                  | 27 December 2021 |
| PNS/DOE QS 017:2021 – Petroleum Products [CME] – ADOB4 Specification  | This standard addresses the technical requirement of automotive diesel oil containing 4% v/v CME or CME-blended automotive diesel oil (ADOB4) and suitable test methods.                  | 27 December 2021 |
| PNS/DOE QS 018:2021 – Petroleum Products – CME – IDOB4 – Specification  | This standard specifies the requirement for CME-blended diesel oil suitable for various types of industrial diesel engines.   | 27 December 2021 |

| Title   | Description   | Date Issued  |
|---|---|--|
| PNS/DOE QS 010:2015 – High Fame-Blended Diesel Oils (B5) Specification**  | <p>PNS under the Biofuels Act 2009 (RA9367) in preparation for the eventual mandate for Higher blend</p> <p>This is a new standard developed/formulated to address the technical requirements of high FAME-blended diesel oil (B5) and suitable test methods.</p> <p>This is in support of future energy policy towards the integration of higher biodiesel blends in the petroleum/fuel sector.</p>  | 27 November 2015   |
| PNS/DOE QS 002:2015 – CME (B100) Specification*   | <p>PNS specifies the requirements for biodiesel (B100) for blending to diesel oil in the production of B2.</p> <p>This standard is a revision/update of PNS/DOE QS 002:2007).</p> <p>Said PNS specifies the requirement for coconut methyl ester (B100) suitable for blending to diesel fuel for use in various types of compression ignition engines and other similar types of engines.</p>   | 27 November 2015   |
| PNS/DOE QS 007:2014 – Anhydrous Bioethanol & Bioethanol Fuel (E100 & E98) Specification*                        | <p>PNS specifies the requirements for biofuel grade ethanol in pure form and denature for use as blending component in the production of E10.</p> <p>This standard is a revision/update of PNS/DOE QS 007:2005.</p> <p>Said PNS specifies the requirement for biofuel grade ethanol in pure form (E100) and denatured (E98) for use as blending component of automotive gasoline suitable for various types of automotive spark ignition engine and other similar types of engines.</p>   | 29 January 2014  |
| <b>II. Petroleum and other Petroleum Related Products</b>   |   |  |
| PNS/DOE QS 09:2019 – Implementing the Philippine National Standard Specification for Kerosene                   | This standard is a revision/update of the PNS/DOE QS 009:2007 on property of flash point with two (2) limits based on test method use and limiting the scope of kerosene to energy related applications, as well as updating the test method.   | 23 December 2019   |
| PNS/DOE QS 005:2016 – Liquefied Petroleum Gases (LPG) As Non-Motor Fuel Specification*                          | This standard is a revision/update of 2005 LPG specs. In this edition improvement was made in the requirements on the use of odorant for health and safety consideration and updating of test method. Said PNS provided only the requirements for LPG as non-motor fuel separate from LPG as motor fuel for effective implementation and monitoring.  | 22 December 2016   |
| PNS/DOE QS 012:2016 – Liquefied Petroleum Gases (LPG) As Motor Fuel Specification*                              | <p>This standard is a revision/update of 2005 LPG specs. In this edition, a new PNS number was created to separate the application of LPG as motor fuel from LPG as non-motor fuel (domestic, commercial, and industrial fuel) which carried the original designation PNS/DOE QS 005 for more effective implementation and monitoring.</p> <p>Said PNS provided only the requirements for LPG as motor fuel separate from LPG as non-motor fuel for effective implementation and monitoring. This is also in support of the Philippine Government's effort to promote the utilization of alternative and clean fuel technology.</p>   | 22 December 2016   |
| PNS/DOE ASTM D910:2010 – Aviation Gasoline Grade 100LL Specification**  | The standard is derived from the ASTM D 910-07A Standard Specification for Aviation Gasoline and is limited only for Grade 100LL all other grades are excluded for the purpose of complying with the Clean Air Act of the Philippines.  | 2010   |
| PNS/DOE QS 003:2003 – Two-Stroke (2t) Lubricating Oil Specification**   | This standard is a revision/update of 1992 2T specs. In this edition the CME is consider as possible feedstock.   | 06 May 2004  |
| <b>Facilities Standards and Code Safety Practices</b>   |   |  |
| PNS/DOE 01:2023 – Tank truck – Bulk liquid fuel – Requirements and Safe Operating Practices                     | The said standard provides for the minimum requirements of tank truck vehicle design and specifications to ensure worker safe, environment friendly and quality assured transport of bulk liquid fuels. Likewise, it also provides for all existing government regulations and requirements at the time of publication, in the operation and maintenance of tank trucks used for liquid fuels.  | 12 May 2023  |
| PNS/DOE 02:2023 – LPG transport – Bulk and cylinders – Requirements and Safe Operating Practices                | This PNS provides for the minimum requirements for vehicle design and specifications to ensure safe, worker safe, environment friendly and quality assured transport of LPG in Cylinders and in bulk.   | 12 May 2023  |
| PNS/DOE 03:2023 – Tank truck – Mobile liquid fuel dispensing system – Requirements and Safe Operating Practices | <p>This Standard covers the minimum requirements for the transportation of Liquid Fuels Mobile Vehicle Dispensing System (LFMVDS) used for the dispensing of diesel and/ or gasoline during emergency situations in the aftermath of such as typhoon, earthquake, flood, etc., when the operations of the existing Retail Outlets are temporarily non-operational.</p> <p>Under this Standard specification, an LFMVDS shall not be used or deployed to conduct retailing business in areas where existing retail outlets can operate normally even under calamity.</p>   | 12 May 2023  |
| DPNS on LPG Dealer's Showroom<br>And Warehouse Requirements with Safety Practices                               | <p>This Standard covers the minimum facility requirements for LPG Dealers to ensure safe and proper storage of LPG cylinders and canisters during retail operations. An LPG Dealer's facility may be a showroom, or a showroom and a warehouse. The Showroom consists of the LPG display area, office space for business transactions, and stock area for LPG cylinders available for sale, and empty or returned cylinders/ canisters.</p> <p>This Standard also incorporates the Safety Practices that must be observed in the operations and upkeep of warehouses and showrooms used for the storage and sale of LPG in cylinders. Covered in the Safety Practices are Cylinder Storage, Cylinder Stacking, Handling of LPG Cylinders, Personnel Safety, and Informational Signages.</p> | On-going development with concerned stakeholders and government agencies (For circulation) |



| Title   | Description  | Date Issued       |
|---|--|-------------------|
| Modules of Instruction for LPG Cylinder Refillers   | The Modules aim to uphold and promote competency among the LPG Cylinder Refillers, which provide methodologies and set of conditions to ensure proficiency in the operational level.   | 29 October 2019   |
| Handbook on Code of Safety in Liquid Petroleum Products (LPP) Depot   | The Code constitutes good industry practices for oil terminals/ depots and is designed to prevent accidents at LPP terminal/ depot facilities and ensure product quality.  | 19 September 2019 |
| PNS 05:2019 Road vehicles   | Code of practice for the use of liquefied petroleum gas (LPG) system in international combustion engine  | 30 August 2019    |
| PNS/DOE FS 9:2016 – Code of Safety Practice in Auto-LPG Dispensing Pumps**  | This Code of Safety Practices is intended for managers/operators collectively referred to as Responsible Officer of Auto-LPG dispensing station focusing on safety and good practice procedures with reference to relevant health and safety standards. A retail outlet must have a Responsible officer knowledgeable in:<br>a) Worker safety in the conduct of:<br>b) dispensing operation<br>c) product receiving<br>d) Personal Protective Equipment and its use<br>e) Relevant environmental regulations<br>f) Petroleum Product Material handling (MSDS)<br>Emergency response  | 2016              |
| PNS/DOE FS 8:2013 Transportation of Petroleum Product by Pipeline**   | This standard covers operation and maintenance, reporting requirements and other applicable provisions in the on-shore transportation via pipeline (as defined hereafter) of liquid petroleum products for white (such as but not limited to gasoline, diesel, kerosene and jet A-1) and (such as but not limited to) black (bunker fuel) products to ensure the safety of the general public and pipeline workers and the protection of the environment against the risk of petroleum contamination, fire and other similar hazards in areas where the pipeline system operates and/or traverses.<br><br>An operator may make arrangements with a third party for the performance of any action required by this standard. However, the operator is not thereby relieved from the responsibility for compliance with any requirement of the same. | 2013              |
| PNS/DOE FS 6:2011 – Storing and Handling of E-Gasoline in Retail Outlets**  | This standard describes good engineering practices, as well as safety, environmental and fire protection requirements for the storing and handling of E-gasoline in retail outlets.<br><br>This standard is an additional requirement that complements PNS/DOE FS 1-1 to 1-4:2005 (Retail Outlet – Health, Safety and Environment, Underground Storage Tank, Piping System and Dispensing Pump).   | 2011              |
| PNS/DOE FS 7-1:2011 – Storing and Handling of B-5 In Retail Outlet – Health, Safety and Environment**                         | This section covers the facilities, clearances and distances therein intended for retail outlets storing and handling up to B5 and applicable to all kind of locations either with mid-block lot, corner lot and passing-thru lot.   | 2011              |
| PNS/DOE FS 7-2:2011 Storing and Handling of B-5 In Retail Outlet – Underground Storage Tank**                                 | This standard specifies the requirements for the following:<br>a) The tank for petroleum products used in retail outlet, refers to gasoline, diesel (up to B5), and kerosene tanks. It does not include tanks for lube oils, aviation fuels, chemicals, solvents, asphalt, waste oil, water etc.<br>b) Tank design performance and construction.<br>c) The installation and location of tanks at retail outlet.<br>Operations, periodic maintenance, and eventual disposal of the underground tank.  | 2011              |
| PNS/DOE FS 7-3:2011 – Storing and Handling of B-5 In Retail Outlet – Piping System **   | These recommended guides and procedures are applicable to sites where underground piping systems for petroleum products will be used.<br><br>This document covers the medium in which petroleum product shall be conveyed from the point where the product is received on its way to its storage tank, from the storage tank to the final point of connection at the dispensing pump, and tank ventilation.<br><br>These guides are applicable for use with the following petroleum products, gasoline, kerosene and diesel only.<br><br>Above ground piping for petroleum products is not covered by these guidelines.  | 2011              |
| PNS/DOE FS 7-4:2011 – Storing and Handling of B-5 In Retail Outlet – Dispensing Pumps**                                       | This standard shall include the design, installation and commissioning of self-contained dispensing pumps (suction pump) and dispenser (pressurized pump), and the connection of product supply pipework, hoses and nozzles, electrical wiring and communication cables.<br><br>Operation, periodic maintenance, decommissioning and eventual disposal of the above-ground dispensing pumps and dispensers.<br><br>Requalification of reconditioned pumps.   | 2011              |
| PNS/DOE FS 5:2010 – Storing and Handling of CME-Methyl Ester (CME) and CME -Diesel Blends at Liquid Petroleum Product Depot** | This standard describes practices and requirements for the storing, handling and fire protection of CME and CME diesel blend at Liquid Petroleum Product Depots. For purposes of this standard Biodiesel is referred to as CME.  | 2010              |

| Title   | Description   | Date Issued |
|---|---|-------------|
| PNS/DOE FS 4:2007 –Liquid Petroleum Product Depot**   | <p>This standard covers the design and construction of depots and associated facilities involved in marketing/ redistribution of liquid petroleum products. For purposes of this standard, liquid petroleum products shall only refer to gasoline, diesel, kerosene, and bunker fuel. Biofuels and biofuel-blended petroleum products shall be covered by a separate standard. Depot, also referred to as terminals or installations consist of tank farms, loading and unloading areas, pipeline manifolds, storage areas, warehouses, docks, garages laboratories, and office buildings.</p> <p>Products may be received, blended, and/or distributed by pipeline, marine facilities (docks, piers, jetties, wharves), or truck. Petroleum depots may also store and distribute petroleum products in package and container quantities.</p> | 2007        |
| PNS/DOE FS 3:2006 – Auto-LPG Dispensing Pumps**   | <p>This standard covers the requirements for the installation of auto-LPG dispensing stations for retail operation and garage-based sites for on vehicle dispensing of LPG for vehicles of any type.</p> <p>If any dispensing for the public can occur, the installation becomes a retail station as defined, and specific additional requirements apply. The additional requirement for the retail station is to adequately ensure public safety attendant to the nature of operation. This standard does not apply to forklift cylinder refilling. Only fixed and vehicle-mounted fuel tanks are permitted for filling at dispensing stations.</p> <p>LPG cylinders for household use shall not be allowed for refill in an auto-LPG dispensing station.</p>  | 2006        |
| PNS/DOE FS 1-1:2005 Petroleum Products Retail Outlet – Health, Safety and Environment**                   | This standard covers the facilities, clearance and distances therein intended for retail outlet applicable to all kinds of lots from mid-block lot, corner lot and passing thru-lot.  | 2005        |
| PNS/DOE FS 1-2:2005 – Petroleum Products Retail Outlet – Underground Storage Tank**                       | <p>This standard specifies the requirements for the following:</p> <ul style="list-style-type: none"> <li>a) The tank for petroleum products used in Retail Outlet. This refers to gasoline, diesel, and kerosene tanks.</li> <li>b) Tank design performance and construction</li> <li>c) The installation and location of tanks at retail outlet</li> <li>d) Operations, periodic maintenance, and eventual disposal of the underground tank</li> </ul> <p>It does not include tanks for lube oils, aviation fuels, chemical, solvents, asphalt, waste oil, water etc.</p>   | 2005        |
| PNS/DOE FS 1-3:2005 – Petroleum Products Retail Outlet – Piping System**                                  | <p>This standard is applicable to sites where underground piping systems for petroleum products will be used.</p> <p>This standard covers the medium in which petroleum products, gasoline, kerosene and diesel only.</p> <p>Applicable for use with the following petroleum products; gasoline, kerosene, and diesel only.</p> <p>Aboveground piping for petroleum products is not covered by these guidelines</p>   | 2005        |
| PNS/DOE FS 1-4:2005 – Petroleum Products Retail Outlet – Dispensing Pumps**                               | <p>This standard specifies:</p> <p>The design, installation, and commissioning of self-contained dispensing pumps (suction pump) and dispenser (pressurized pump), and the connection of product supply pipework, hoses, nozzles, electrical wiring, and communication cables; The operation, periodic maintenance, decommissioning and eventual disposal of the aboveground dispensing pumps and dispensers; and the requalification of reconditioned pumps.</p>   | 2005        |
| PNS/DOE FS 2:2018 Amendment 1:2020 – Liquefied Petroleum Gas (LPG) Refilling Plant – General Requirements | This amends the existing standard to reduce the minimum separation distance between each of the fixed storage tank of the bulk plant and the nearest point of the cylinder filling hall from fifteen (15) to as low as three (3) meters provided that the specified conditions are met.   |             |
| * Mandated PNS with corresponding DC<br>** PNS serves only as reference or voluntary standard             |   |             |



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