



DEPARTMENT CIRCULAR NO. _____

**POLICY PRESCRIBING THE GUIDELINES ON THE PREPARATION AND
REVIEW OF THE TRANSMISSION DEVELOPMENT PLAN**

WHEREAS, Section 5 (a) of the Republic Act (RA) No. 7638, otherwise known as the “*Department of Energy Act of 1992*,” mandates the Department of Energy (DOE) to formulate policies for the planning and implementation of a comprehensive program for the efficient supply and economical use of energy consistent with the approved national economic plan and with the policies on environmental protection and conservation and maintenance of ecological balance, and provide a mechanism for the integration, rationalization, and coordination of the various energy programs of the Government;

WHEREAS, RA No. 9136 or the “*Electric Power Industry Reform Act of 2001*” (EPIRA), it is the declared policy of the State, among others, to: (a) ensure the quality, reliability, security and affordability of the supply of electric power, (b) protect the public interest as it is affected by the rates and services of electric utilities and other providers of electric power, and (c) promote the utilization of indigenous and new and renewable energy (RE) resources in power generation in order to reduce dependence on imported energy;

WHEREAS, Section 37 of the EPIRA mandates the DOE, among others, to: (a) develop and update annually the existing Philippine Energy Plan (PEP), which shall provide for an integrated and comprehensive plan for exploration, development, utilization, distribution, and conservation of energy resources, with preferential bias for environment-friendly, indigenous, and low-cost sources of energy; (b) prepare and update annually a Power Development Program (PDP), integrating it into the PEP and considering the individual or joint development plans of the transmission, generation, and distribution sectors of the electric power industry; and (c) formulate and implement a program for the accelerated development of non-conventional energy system and the promotion and commercialization of its applications;

WHEREAS, Section 9 of the EPIRA provides that the National Transmission Corporation (TRANSCO) shall, among others, improve and expand its transmission facilities consistent with the Philippine Grid Code (PGC) and the Transmission Development Plan (TDP) to adequately serve generation companies (GenCos), distribution utilities (DUs), and suppliers requiring transmission service and/or ancillary services (AS) through the transmission system, and shall submit any plan for expansion or improvement of its facilities for approval by the Energy Regulatory Commission (ERC): *Provided*, that ERC shall review and approve such plans submitted by TRANSCO or its buyer or concessionaire with due regard to the TDP, consistent with Rule 3, Section 4 (c) of the Implementing Rules and Regulations of the EPIRA (EPIRA-IRR)

43 **WHEREAS**, Rule 3, Section 1 (c) of the EPIRA-IRR states that the DOE, following its
44 approval of the TDP prepared by the TRANSCO or its buyer or concessionaire, shall
45 integrate the TDP with the annual development plans of DUs and National Power
46 Corporation (NPC), and other relevant data as are available to DOE, which shall be
47 incorporated in the PEP;

48
49 **WHEREAS**, Rule 6, Section 10 (b) of the EPIRA-IRR stipulates that TRANSCO or its
50 Buyer or Concessionaire is mandated to prepare the TDP, in consultation with the
51 electric power industry participants, and shall submit an updated TDP for approval by
52 DOE for integration into the PDP and the PEP;

53
54 **WHEREAS**, on 28 February 2008, the National Grid Corporation of the Philippines
55 (NGCP), pursuant to RA No. 9511 entitled "*An Act Granting the National Grid
56 Corporation of the Philippines a Franchise to Engage in the Business of Conveying or
57 Transmitting Electricity through a High Voltage Back-bone System or Interconnected
58 Transmission Lines, Substations and Related Facilities, and For Other Purposes*" was
59 granted the concession to construct, install, finance, manage, improve, expand,
60 operate, maintain, rehabilitate, repair and refurbish the present nationwide
61 transmission system, subject to the terms and conditions of the Concession
62 Agreement entered into among TRANSCO, NGCP and Power Sector Assets and
63 Liabilities Management Corporation (PSALM);

64
65 **WHEREAS**, under RA No. 9513, otherwise known as the "*Renewable Act of 2008*"
66 (RE Act), it is declared policy of the State to accelerate and encourage the exploration,
67 development and utilization of renewable energy (RE) resources as tools to effectively
68 prevent or reduce harmful emissions and hereby balance the goals of economic
69 growth and development with the protection of health and the environment, and to
70 establish the necessary infrastructure and mechanism to carry out the mandates
71 specified in the RE Act and other existing laws, among others;

72
73 **WHEREAS**, under Section 11 of the RE Act, TRANSCO or its successor-in-interest or
74 its buyer or concessionaire, shall include the required connection facilities for RE-
75 based power facilities in the TDP: *Provided*, That such facilities are approved by the
76 DOE, consistent with 2023-2050 PEP RE share targets and the PDP;

77
78 **WHEREAS**, to achieve the Philippines' RE targets and safeguard the capacity
79 commitments of RE developers, the need for the timely installation and completion of
80 facilities for the transmission system has become critical to ensure that RE
81 development and investor interest therein are not delayed, hampered or discouraged
82 by unavailable, inadequate and delayed transmission infrastructure, and that RE
83 developments are completed, and generation capacities delivered on time to ensure
84 the country's energy security;

85
86 **WHEREAS**, consistent with the PEP and the PDP, which sets the overall direction for
87 ensuring a secure, reliable, affordable, and sustainable power supply, there is an
88 urgent need to ensure the timely installation, upgrading, and completion of
89 transmission facilities to enable the integration of committed and upcoming generation
90 projects that are essential to meet the country's energy transition and supply security
91 goals;

92
93 **WHEREAS**, Department Circular (DC) No. DC2020-02-0004, entitled "*Guidelines for
94 the Planned Outage Schedules of Power Plants and Transmission Facilities, and the*

95 *Publication of the Grid Operating and Maintenance Program*" establishes the policy
96 framework for the coordinated scheduling of planned outages of power plants and
97 transmission facilities through the preparation and publication of the Grid Operating
98 and Maintenance Program (GOMP), thereby promoting the reliable, secure, and
99 efficient operation of the Grid;

100
101 **WHEREAS**, DC Nos. DC2023-04-0008 and DC2026-02-0008 recognized the
102 significance of Energy Storage System (ESS) as an emerging technology in ensuring
103 the quality, reliability, security, sustainability, and affordability of electric power, and
104 further provide that ESS operations triggered by grid disturbances shall be classified
105 as AS, specifically for voltage and Frequency regulation;

106
107 **WHEREAS**, the Green Energy Auction Program of the DOE is one of the key
108 mechanisms to encourage energy stakeholders for direct contribution to the additional
109 capacities of RE technologies necessary to meet the Government's target RE share;

110
111 **WHEREAS**, the continuous integration of solar and wind power plants to the Grid
112 increases the levels of Inverter-Based Resources, which can lead to faster and more
113 significant deviations in voltage and Frequency levels compared to systems with
114 higher level of synchronous generation, thereby necessitating improved
115 responsiveness in voltage and Frequency regulation;

116
117 **WHEREAS**, DC No. DC2025-10-0019 otherwise known as the "*Policy Framework for*
118 *the Integration of Nuclear Energy in the Country's Generation Mix*," directs the
119 Transmission Network Provider (TNP) and System Operator (SO) to: (a) construct,
120 enhance, or expand the necessary transmission infrastructure in time to support the
121 effective integration and distribution of nuclear energy from the Pioneer Nuclear Power
122 Plant (NPP) to the Grid, (b) include nuclear energy in the expansion and enhancement
123 of the national Grid in the TDP, (c) conduct and publish a grid readiness assessment
124 for the integration of the Pioneer NPP, which shall be reflected in the TDP, and (d)
125 ensure the dispatch of generation by the Pioneer NPP as baseload, and procure the
126 necessary AS;

127
128 **WHEREAS**, the Smart Green and Grid Plan (SGGP) serves as the strategic roadmap
129 for modernizing and expanding the country's transmission system by providing
130 transmission planning analyses, identifying transmission capacity gaps, and
131 recommending transmission projects, grid-enhancing technologies (GET), and other
132 planning solutions to support the implementation of the PEP, including the large-scale
133 integration of RE and the country's clean energy transition goals;

134
135 **WHEREAS**, integrated resource planning and the timely implementation of the TDP
136 are essential to ensure the coordinated development of generation and transmission
137 infrastructure and facilitate the timely development, commercial operation, and grid
138 integration of committed power projects, particularly RE projects, thereby supporting
139 the achievement of the country's energy transition targets;

140
141 **WHEREAS**, in response to the emerging challenges affecting the Grid, the evolving
142 requirements of the transmission system, and the need to facilitate the timely
143 integration of new generation projects, particularly those critical for energy transition
144 and energy security, the DOE issued: (a) DC No. DC2026-01-0001, which allows
145 GenCos to construct their point-to-point (P2P) connection facilities and finance and
146 construct the associated transmission projects or upgrades to the main Grid that are

necessary to accommodate their additional capacities; and (b) DC No. DC2026-02-0007, which allows TRANSCO to finance and/or construct transmission lines and facilities critical to the country's energy transition;

WHEREAS, the SGGP and other relevant plans and programs of the DOE will help expedite the implementation of transmission policies, fast-track critical infrastructure projects, facilitate the integration of clean energy sources, and ultimately build a sustainable, reliable, and resilient power Grid;

NOW THEREFORE, for and in consideration of the foregoing premises, the DOE hereby adopts the policy prescribing the guidelines on the preparation and review of the TDP.

Section 1. Governing Principles. – The preparation of the annual TDP by TRANSCO or its buyer or concessionaire shall be governed by the following principles:

- 1.1 Ensure the adequacy, reliability, security, stability, and efficiency of the Grid.
- 1.2 Promote timely development of transmission infrastructure aligned with the PEP, PDP, and Distribution Development Plans (DDPs).
- 1.3 Enhance transparency, accountability, and public participation in Grid planning through structured stakeholder consultations.
- 1.4 The Grid shall be planned and designed such that reasonable and foreseeable contingencies do not result in the loss, unintentional separation of a major portion of the Grid, or Cascading Outages.
- 1.5 The Grid shall provide robustness and flexibility in switching arrangements, voltage control, and other protection system measures to ensure reliable and stable system operation.
- 1.6 The Grid shall be planned to avoid excessive dependence on any transmission circuit, structure, or substation.
- 1.7 The Grid shall be planned using a long-term transmission roadmap that is periodically updated to reflect changing system conditions and to ensure that the prescribed transmission line has the capability to withstand typhoons, earthquakes, other hazards or natural calamities, in accordance with the latest Philippine Electrical Code (PEC), PGC, and other applicable standards.
- 1.8 The Grid shall be planned in a timely, organized, and coordinated manner to facilitate the integration of generation projects and support the efficient delivery of new capacities, align grid development programs with DUs and generation's requirements, and promote investor confidence, thereby enhancing the reliability, adequacy, affordability, and security of the country's energy supply.
- 1.6 The Grid shall be planned using a least-cost approach, ensuring that all proposed transmission line projects are prudent, reasonable in cost, technically feasible, and economically justified.
- 1.7 The Grid shall be planned to support future regional power interconnections

and cross-border electricity trade.

1.8 The assessment of transmission system capability and the need for system enhancements should consider the GOMP.

1.9 Significant Incident evaluations should be conducted to measure the robustness of the Grid and to maintain a state of preparedness to deal effectively with such incidences.

SECTION 2. COVERAGE

This Circular shall apply to TRANSCO or its buyer or concessionaire in the preparation of the TDP, including the integration of the outcomes of the SGGP, relevant plans and programs of the DOE, and inputs from consultations with stakeholders, such as GenCos and DUs.

SECTION 3. DEFINITION OF TERMS

Adequacy – refers to the ability of the Power System to supply the aggregate electrical Demand and Energy requirements of the Customers at all times, taking into account the scheduled and reasonably expected unscheduled outages of the system elements.

Board of Electrical Engineering (BEE) – refers to the Board created under RA No. 7920, otherwise known as the “*New Electrical Engineering Law*” under the general supervision and administrative control of the Professional Regulation Commission.

Cascading Outage – refers to the uncontrolled successive failure or tripping of system Components triggered by any incident or system disturbance at any location.

Component – refers to a piece of electrical equipment, a line or circuit, a section of line or circuit, or a group of items, which is viewed as a unit for a specific purpose.

Congestion – refers to a situation where cheaper power from a Generating Unit cannot be Dispatched and is replaced by more expensive power to supply the demand requirements because (i) the limit of a transmission line or the capacity of a Transformer is reached, and no more additional power may be transmitted through this line or Transformer; and/or (ii) the Grid Operating Criteria limits the transmission capabilities in some portions of the network.

Contingency – refers to the Outage of a single Component of the Grid that cannot be predicted in advance.

Customer – refers to an entity who engages in the activity of purchasing electricity supplied through a transmission or Distribution System.

Demand -refers to the rate at which electric energy is being used, usually expressed in MW.

Distribution Utilities (DUs) – refers to any electric cooperative, private corporation, or government-owned utility which has a franchise to operate a distribution system, including those franchise covers economic zones.

Energy – refers as used by electric utilities, it is generally a reference to electrical Energy and is measured in kilowatt-hours (kWh).

243 **Equipment** – refers to all apparatus, machines, conductors, accessories etc. used as
244 part of, or in connection with an electrical installation.

245 **Event** – refers to a remarkable unscheduled or unplanned occurrence of an abrupt
246 change or disturbance in a Power System due to fault, Equipment Outage, Adverse
247 Weather condition or natural phenomena.

248 **Frequency** - refers to the number of complete cycles of a sinusoidal current or voltage
249 per unit time, usually measured in cycles per second or Hertz.

250 **Facility Ratings** – refers to the maximum electrical load measures in megawatts or
251 amperes – that a piece of equipment or an entire power facility can safely carry without
252 causing equipment damage or compromising grid reliability.

253 **Generating Plant** – refers to one or more Generating Units, where electric Energy is
254 produced from some other form of Energy by means of a suitable apparatus.

255 **Generating Unit** – refers to a unit conversion apparatus including auxiliaries and
256 associated Equipment, functioning as a single unit, which is used to produce electric
257 Energy from some other form of Energy.

258 **Generation Company (GenCo)** – refers to any person or entity authorized by the
259 ERC to operate a facility used in the Generation of Electricity.

260 **Grid** – refers to the High Voltage backbone system of interconnected transmission
261 lines, substations and related facilities, located in each of Luzon, Visayas and
262 Mindanao, or as may be determined by the ERC in accordance with Section 45 of the
263 EPIRA.

264 **High Voltage (HV)** – refers to a voltage level exceeding 34.5 kV up to 230 kV.

265 **Independent Market Operator (IMO)** – refers to an independent entity that operates
266 the Wholesale Electricity Spot Market.

267 **Inverted Pyramid** – refers to the level of uncertainty the further into the future the
268 planning process looks, widest in the far future when uncertainty is high, and narrowest
269 at the tip of the pyramid when uncertainty is less. The Horizon Year-Stage Back
270 method inverts the pyramid by starting from the far future or horizon year and staging
271 back to the present.

272 **Load** – refers to an entity or electrical Equipment that consumes or draws electrical
273 Energy.

274 **Outage** – refers to the state of a Component when it is not available to perform its
275 intended function due to some Event directly associated with that Component. An
276 Outage may or may not cause an Interruption of service to Customers.

277 **Philippine Electrical Code (PEC)** – refers to the set of rules which provide for the
278 safety in electrical installation, construction, operation and maintenance, and the
279 utilization of electricity mandated under the “New Electrical Engineering Law”.

280 **Philippine Electricity Market Corporation (PEMC)** – refers to a non-stock, non-profit
281 entity to serve as the governing body and autonomous market operator for the
282 Wholesale Electricity Spot Market as mandated by EPIRA to introduce competition
283 and efficiency into the power sector.

284 **Philippine Grid Code (PGC)** – refers to the set of rules, requirements, procedures,
285 and standards to ensure the safe, reliable, secured and efficient operation,
286 maintenance, and development of the Grid and its related facilities.

287 **Pioneer Nuclear Power Plant (NPP)** – refers to the first commercially developed and
288 operated NPP in the Philippines, consistent with DC No. DC2025-10-0019.

289 **Power System** – refers to the integrated system of transmission, distribution network
290 and Generating Plant for the Supply of Electricity.

291 **Reactive Power** – refers to the Component of electrical power representing the
292 alternating exchange of stored Energy (inductive or capacitive) between sources and
293 loads or between two systems, measured in VAR or multiples thereof. For AC circuits
294 or systems, it is the product of the RMS value of the Voltage and the RMS value of the
295 quadrature Component of the alternating current. In a three-phase system, it is the
296 sum of the Reactive Power of the individual phases.

297 **Reliability** – refers to the performance of the elements of the bulk electric system that
298 results in electricity being delivered to Customers within accepted standards and in
299 the amount desired. Reliability may be measured by the Frequency, duration, and
300 magnitude of adverse effects on the electric supply.

301 **Security** – refers to the continuous operation of a Power System in the Normal State,
302 ensuring safe and adequate supply of power to End-Users, even when some parts or
303 Components of the system are on Outage.

304 **Significant Incident** – refers to a single or series of events that has a serious or
305 widespread effect on the Grid, a distribution system, or a user's system. This includes
306 events that impact the quality, reliability, and security of power supply. This includes
307 those mentioned in the Philippine Grid Code and Philippine Distribution Code, as well
308 as events that trigger alert states

309 **Stability** – refers to the ability of the dynamic Components of the Power System to
310 return to a normal or stable operating point after being subjected to some form of
311 change or system disturbance.

312 **System Operator** – The party responsible for generation Dispatch, or the
313 implementation of the generation Dispatch Schedule of the Market Operator, the
314 provision of Ancillary Services, and operation to ensure safety, Power Quality,
315 Stability, Reliability and Security of the Grid.

316 **Umbrella Principle** – refers to a strategy in which a comprehensive set of
317 transmission projects is designed to address multiple objectives or needs, providing
318 broad benefits across a region or system. Specific to security assessment, the
319 umbrella principle means that a select number of generation dispatch and demand
320 conditions can be specified to represent the full breadth of conditions the transmission
321 system may encounter. If the grid is secure for the extreme conditions, it will likewise
322 be secure for all the other conditions.

323 **Transformer** – refers to an electrical device or Equipment that converts Voltage and
324 current from one level to another.

325 **Transmission Development Plan (TDP)** – refers to the program for expansion,
326 reinforcement, and rehabilitation of the Grid which is prepared by the Transmission
327 Network Provider and submitted to the DOE for integration with the PDP and PEP.

Transmission Network Provider (TNP) – refers to the party that is responsible for maintaining adequate Grid capacity in accordance with the provisions of the Philippine Grid Code.

Upstream Facilities – refers to the infrastructure and operations involved in the earliest stages of the energy supply chain.

SECTION 4. Preparation of the TDP.

The preparation of the TDP shall revolve around the principle that the Grid should be planned efficiently and economically. Moreover, the Grid should perform this function under various conditions to ensure safe, efficient, and reliable transmission of electricity from generating plant connection points to points of delivery of the DUs and non-DUs through efficient and economically viable expansion plan. In support of these planning objectives, the TDP shall consider the SGGP and identify the applicable recommendations incorporated therein and provide appropriate justification for any recommendation that is deferred, modified, or not adopted.

To achieve this purpose, the TDP should consider the following requirements:

4.1 TRANSMISSION SYSTEM PLANNING REQUIREMENT

The Transmission System Planning encompasses the Grid planning and process of designing and developing high-voltage networks, including system impact analysis, thus requires balancing technical, economic, and environmental considerations to accommodate growing needs, integrate Variable RE sources and emerging technologies, and enhance grid reliability performance. As energy systems evolve, effective transmission planning is essential for enabling a cleaner, more flexible, and robust electric grid. Also, the Grid must be designed to withstand credible system Contingencies, both planned and unplanned, at any given system conditions.

To develop a comprehensive upgrade to the Philippine grid and institutionalize the transmission planning framework established under the SGGP, the following planning methodology shall be integrated in the preparation of the TDP:

- i. *Capacity-Based Grid Planning*: This planning prioritizes sufficient transmission capacity (measured in megawatts) to deliver power from generation sources to load centers, driven by generation dispatch and demand levels. While capacity needs are typically driven by peak demand, the SGGP Phase II also accounts for other scenarios such as high variable renewable energy output, energy storage operations, and demand-side management, all of which can stress the grid in different ways. Because multiple generation dispatch patterns can significantly affect transmission loading, even during off-peak periods, the system must be robust enough to handle not just typical conditions but also off-merit dispatch, maintenance outages, and regional constraints. To address this variability, SGGP Phase II applies the Umbrella Principle, which means that if the grid is secure in the most severe operating states, it will be secure under less severe operating states.

The resulting transmission plan aims to accommodate extreme operating conditions with minimal curtailment or unserved load, ensuring high

reliability while avoiding overinvestment by striking a balance between system performance and cost efficiency. The following were considered to come up with robust and flexible transmission projects and solutions: 1) Power System Reliability, 2) Steady State Security, 3) Congestion, 4) Dispatch Modeling, and 5) Costs of Unreliability.

- ii. Sequential Planning: Transmission plans must coordinate closely with two other aspects of grid development: (1) demand growth and spatial distribution plans and forecasts, and (2) generation development plans. In the case of SGGP Phase II, a sequential approach was used. Both the demand forecast and the generation portfolios are developed separately before the transmission planning proper. This approach is used where power system investment – such as generation, distribution, and transmission upgrades – are determined in a step-by-step, chronological order rather than optimized all at once.
- iii. Scenario-Based Planning and Energy Policy Alignment: Transmission planning shall assess the adequacy and performance of the Grid under the applicable planning scenarios adopted in the latest PEP, including the corresponding assumptions on electricity demand, generation expansion, RE deployment, ESS, emerging technologies, and other relevant planning parameters to accommodate varying future power system conditions in line with the nation's energy security, sustainability, and decarbonization goals.
- iv. Regional Interconnection Planning: Transmission planning shall consider existing and planned domestic and regional power interconnections, including initiatives under the ASEAN Power Grid (APG), the ASEAN Interconnection Masterplan Study (AIMS), and other cross-border electricity interconnections. Where applicable, the TDP shall assess the transmission infrastructure, operational requirements, system reliability impacts, and implementation strategies necessary to support future regional and domestic interconnections.
- v. Horizon Year-Stage Back Methodology: The Horizon Year-Stage Back sequence to determine first the bulk of transmission upgrades on the long-term plan horizon year (2050), evaluates earlier study years, then, determine at what stage or year each transmission element is needed. The horizon year needs to be sufficiently far into the future to capture the broader design characteristics of the transmission grid and to represent the long-term usage of transmission elements such as transmission lines and transformers. The horizon year should be proximate enough to limit the uncertainty of forecasting future load and generation.
- vi. Climate Resilience and Asset Hardening Framework: The TDP shall incorporate risk-based resilience standards against severe weather events, geohazards, and climate risks.

The TNP and SO may adopt other internationally or locally recognized transmission system planning methodologies to develop the TDP, as may be appropriate, subject to the review and approval of the DOE, or upon its motu proprio directive.

4.2 TECHNICAL ASSESSMENTS

The TDP shall include technical assessments to evaluate the adequacy, reliability, security, efficiency, and performance of the Grid under existing and projected operating conditions. These assessments shall support the identification, justification, and prioritization of transmission development projects and other measures necessary to ensure compliance with the PGC and other applicable laws, rules, regulations, and standards. The technical assessments shall include, but are not limited to, the following:

4.2.1 POWER QUALITY ASSESSMENT

The Power Quality Assessment shall evaluate compliance with the power quality requirements prescribed under the PGC, including, but not limited to, voltage profile, frequency performance, harmonic distortion, voltage fluctuations and flicker, voltage unbalance, reactive power adequacy, short-circuit levels, and other parameters necessary to ensure the reliable, secure, and efficient operation of the Grid.

The assessment shall identify existing and anticipated power quality issues arising from load growth, generation integration, IBRs, ESS, nuclear power facilities, and other emerging technologies, and shall recommend appropriate mitigation measures to maintain compliance with the PGC.

4.2.2 RELIABILITY ASSESSMENT

It is the assessment and review of the overall Reliability of the Grid, conducted periodically and when warranted, as may be necessary to compare its actual performance with the targets. It also includes the conduct of other reliability assessments when the need arises or when requested by the DOE, the ERC, which mostly include, but are not limited to, studies regarding policy and regulatory directions which affect the security, performance and adequacy of the Grid. Further, to carry out reliability assessments, it should ensure that there are sufficient data and input provided by other energy stakeholders or gathered by the TNP.

4.2.3 TRANSMISSION CONGESTION ASSESSMENT

The TDP shall include a Transmission Congestion Assessment to identify existing and projected transmission constraints that may affect the operation of the Grid. The assessment shall evaluate the impacts of transmission congestion on power transfer capability, system reliability, RE integration, including renewable energy curtailment, and market operations, and identify appropriate transmission reinforcements and other mitigation measures.

4.2.4 PERFORMANCE ASSESSMENT OF THE GRID

The TDP shall include an assessment of the performance of the existing transmission system using appropriate performance indicators to evaluate the effectiveness of transmission planning, project implementation, and Grid operation. The assessment shall identify historical trends, current performance, projected improvements, and areas requiring corrective action to ensure the continuous enhancement of the transmission system.

The performance assessment shall include, at a minimum:

- a. System Availability
- b. Frequency and Voltage Compliance
- c. Frequency and duration of transmission outages;
- d. Transmission losses;
- e. Compliance with N-1 criterion; and
- f. Other performance indicators as may be prescribed by the DOE.

4.2.5 Other technical assessments as may be required by the DOE or the TDP Review Team (TDP-RT) as created under Section 5 of this Circular.

4.3 SINGLE OUTAGE CONTINGENCY (N-1) CRITERION COMPLIANCE

The TDP shall demonstrate that the proposed transmission projects comply with the Single Outage Contingency (N-1) Criterion in accordance with the PGC. The assessment shall identify existing and projected non-compliance with N-1 Criterion, evaluate the impacts of credible contingencies on system reliability, and identify the necessary transmission reinforcements and other appropriate measures to comply with the N-1 Criterion.

4.4 FACILITY CONNECTION REQUIREMENTS

The inspection, testing, and assessment of the Equipment involved in the generation, transmission, and use of electricity to ensure that it is properly connected to the Grid. This is to avoid degradations of the Reliability performance of the electric systems which they are connected to.

4.5 VOLTAGE SUPPORT AND REACTIVE CONTROL

Sufficient reactive resources must be available throughout the Grid for it to be able to perform its function, considering a balance between static and dynamic characteristics and must be distributed throughout the Grid among the Generating Plants, Transmission, and Distribution facilities, as well as at some Customer locations. Both static and dynamic Reactive Power resources are needed in both Transmission and Distribution Systems, not only to supply the Reactive Power requirements of Customer Demands and the Reactive Power losses, but to provide adequate system voltage support and control as well. They are also necessary to avoid voltage instability and widespread system collapse in the Event of Contingencies.

4.6 AVAILABLE TRANSMISSION CAPACITIES (ATC)

The TDP shall include the available capacity of existing and planned substations and associated transmission facilities in the Grid to identify potential connection points for new generating facilities, energy storage systems, directly connected customers, and other Grid users, with due consideration of anticipated generation resources to facilitate energy resource development.

The ATC shall include, at a minimum, the following information:

- a. the location of the available connection point, identified by substation and municipality or city, and, where applicable, by barangay;
- b. the corresponding voltage level;
- c. the available transmission capacity, in MW and/or MVA;
- d. the forecasted loading of the corresponding substation or associated transmission facility; and
- e. other technical limitations or connection requirements relevant to prospective Grid users.

4.7 SIGNIFICANT INCIDENT MONITORING

Recorded and verified information about Transmission or Distribution system faults or disturbances are essential to determine the performance of the Power System as a whole, the nature and cause of a disturbance, how did certain Power System Components or Equipment react, effect to the Grid, and to consider in the System Planning.

4.8 SYSTEM MODELING DATA REQUIREMENTS

An accurate set of Power System data for system modeling is critical to conduct simulation studies. System modeling data must be developed in a timely manner to realistically simulate the electrical system behavior of Grid Components and allow accurate planning. These datasets will enable planners to simulate system behavior, assess adequacy and security, and identify optimal transmission investments to ensure reliable, efficient, and compliant grid operation over the planning horizon.

4.8.1 GENERATING PLANT EQUIPMENT

Accurate and validated information of the Generating Unit models, and data, as required, are essential for both planning and operating studies to ensure electric system Reliability and stability.

Generating capability must be accounted for in a uniform manner that ensures the use of realistically attainable values when planning and operating the systems or scheduling Equipment maintenance. This also includes, as applicable, seasonal deratings, effective load carrying capability of generating resources, and operational characteristics to reflect variations in performance due to ambient conditions and resource availability.

4.8.2 FACILITY RATINGS

Facility ratings determine acceptable electrical loadings on Equipment, before, during, and after system contingencies, with consideration of network voltage and system stability to determine the capability of the systems to deliver electric power from generation to point of use. It is essential for Grid Planning. It dictates the maximum electrical load, current, or power flow that the combined assets can safely handle without violating the thermal limits of any component.

4.8.3 DEMAND CHARACTERISTICS

The accurate representation of actual and forecast Customer Demand is needed for forecasting future electrical requirements, reliability assessments of past electric system Events, Load diversity studies, validation of database, force majeure events, seasonal and time-of-day variations, *i.e.*, hourly, daily, and seasonal load profiles, and response characteristics of various Components. Accurate representations of these Customer Demand characteristics are needed in system modeling since they can have important effects on system Reliability, such as but not limited to, evolving consumptions due to digitalization, *e.g.*, data centers, smart homes, and alike, energy efficiency measures, electrification of the transport sector and adoption of distributed energy resources.

4.8.4 PRODUCTION AND OPERATIONAL COST

Information on the production, operational and asset lifecycle cost of generating facilities that will be used as inputs to simulation and planning studies for the development of optimal grid expansion strategies.

4.8.5 TRANSMISSION NETWORK DATA

This data set describes the physical and operational characteristics of the existing transmission system, which shall include, but not be limited to, the following core data components:

4.8.5.1 Network Topology – Defines the structural configuration of the transmission system, including nodes (buses), transmission lines, substations, and transformer connections. It also includes the geographic layout by region, derived from both simplified and detailed Single Line Diagrams (SLDs), which are essential for visualizing system connectivity and regional interdependencies.

4.8.5.2 Electrical Parameters and Operational Constraints – Covers the technical characteristics governing network performance, including line impedance (resistance and reactance), thermal limits (MVA ratings), line capacities (MW) and estimated line losses.

4.8.5.3 Wheeling Charge – Refers to the tariff or cost associated with the use of the transmission system for delivering electricity from generators to off-takers.

It serves as the foundation for power flow analysis, contingency assessment, and expansion studies.

4.8.6 RELIABILITY & SECURITY DATA

This dataset ensures that the transmission system meets required reliability and security standards under normal and contingency conditions, which shall include, but not be limited to, the following core data components

4.8.6.1 Reliability criteria – Includes quantitative metrics such as Loss of Load Expectation (LOLE) and other adequacy indicators used to assess the probability and duration of supply interruptions. These criteria define acceptable risk levels for system planning.

4.8.6.2 Registered Reserve Capability of Power Plants – Represents the available reserve capacity committed by generation facilities. This information supports contingency analysis and system balancing requirements.

4.8.6.3 Reserve Requirements per grid – Specifies the minimum reserve levels required for each grid or region to maintain system stability and reliability, considering factors such as demand variability, generation mix, and contingency risks.

4.8.7 ENVIRONMENTAL AND POLICY TARGETS

This dataset captures regulatory and policy drivers that influence transmission planning decisions and infrastructure development.

4.8.8 GENERATION EXPANSION PLANNING DATA AND RESULTS

4.8.8.1 List of Committed Power Projects with the latest Target Commercial Operation Date;

4.8.8.2 List of Projects under Green Energy Auction, Mid-merit Auction for Natural Gas, and Nuclear Power Plant Tendering with the latest Target Commercial Operation Date;

4.8.8.3 Capacity build-out per technology type and location;

4.8.8.4 Capacity Market;

4.8.8.5 List of Ancillary Reserve (AS) Contract Capacities;

4.8.8.6 Construction lead time; and

4.8.8.7 Lifetime of assets (economic life)

4.8.9 MARKET AND COST IMPACT ANALYSIS

Information from the Market Operator on the operation challenges leading to Transmission congestion, such as but not limited to: 1) Market Operation Report, 2) Daily and Weekly Report, 3) Daily Significant Variation Report; 4) Daily Pricing Conditions Report; 5) Weekly Market Operation Summary; 6) Congestion and Constraint Assessment Report; 7) Market Outlook Report; and 8) AS Assessment Report.

4.9 PROJECT EVALUATION, SELECTION, DOCUMENTATION, AND TIMELINE

When planning the Grid, the key drivers that will directly affect the development of the Grid must be identified, including the load growth, new generation entry, power quality and technology, system reliability and security, market operation and Policy direction. Moreover, other relevant details such as, but not limited to, requirements and general regulations of government agencies, PEP, SGGP, or other relevant DOE-approved power sector plans and targets, environmental policies and constraints, and economic efficiency must be considered.

4.9.1 PROJECT EVALUATION AND SELECTION

The conduct of market-based and network studies will lead to the identification of necessary multiple candidate Grid projects that can address the problems found in the studies. Further, it is an iterative process that has several feedback loops that could change assumptions, such as reserve, flexibility, sustainability of generation, and other related considerations.

4.9.2 PROJECT DOCUMENTATION

A transparent and adequate documentation that has relevant, comprehensive and concise information is essential in preparations prior to the submission of the project proposal. Hence, it provides full appreciation of the project proposal without seeking more information.

4.9.3 PROJECT TIMELINE

The project implementation timeline shall be realistic and achievable and shall be coordinated with the target commercial operation dates of committed power projects to ensure the timely availability of transmission facilities. The timeline for the ERC approval, permitting requirements, procurement and construction lead times, right-of-way acquisition, and other relevant implementation milestones shall be duly considered. The committed Estimated Time of Completion (ETC) for each transmission project shall be adhered to and shall be deemed the firm date for the completion of such project unless otherwise determined by the ERC.

SECTION 5. Creation of TDP Review Team (TDP-RT)

5.1 To ensure successful and effective implementation of the Circular, the TDP-RT is hereby created and composed, through permanent and alternate representations, of the following:

Chair : DOE Undersecretary for Electric Power Industry Management Bureau (EPIMB)

Secretariat : DOE-EPIMB

Members : TRANSCO
IMO
NEA
NPC

5.2 The TDP-RT may invite representatives from the following agencies to act as resource person/s during the review of the TDP:

- 5.2.1 PSALM;
- 5.2.2 GenCos;
- 5.2.3 DUs;
- 5.2.4 Philippine Independent Power Producers Association (PIPPA);
- 5.2.5 Private Electric Power Operators Association (PEPOA);
- 5.2.6 Ministry of Environment, Natural Resources, and Energy - Bangsamoro Autonomous Region in Muslim Mindanao (MENRE-BARMM);
- 5.2.7 Concerned Regional Development Council (RDC);
- 5.2.8 BEE, and academe; and
- 5.2.9 Other relevant agencies which shall be identified as necessary.

5.3 The EPIMB shall act as the TDP-RT Secretariat which shall provide administrative and logistic support to the TDP-RT and must be composed of the following permanent and alternate representatives:

- 5.3.1 One (1) representative each for permanent and alternate from the Transmission Development Monitoring Section;
- 5.3.2 One (1) representative each for permanent and alternate from the Distribution Development Monitoring Section;
- 5.3.3 One (1) representative each for permanent and alternate from Power Generation Planning and Development Section and Power Supply Monitoring and Compliance Section;
- 5.3.4 One (1) representative each for permanent and alternate from Power Market Development Division; and
- 5.3.5 One (1) representative each for permanent and alternate from Electrification and Missionary Planning and Development Division.

The TDP-RT, through the Secretariat, may invite representatives from other DOE Bureaus, as may be deemed necessary to provide support in the review and alignment of projects with the transmission planning.

SECTION 6. Responsibilities. Pursuant to their respective mandates and functions in the EPIRA and its IRR, this Policy, and other relevant laws and issuances, the TDP-RT and all energy industry participants are hereby enjoined to provide full support and cooperation to ensure that the TDP responds to the policy of the state to ensure and maintain reliability, adequacy, security, stability and integrity of the transmission grid.

Specifically, each of the following agencies and entities shall have the following responsibilities:

6.1 TDP-RT

- 6.1.1 Provides input and oversight into short-term, medium-term, and long-term transmission plans to ensure it supports projected demand growth and RE deployment and recommends solutions to improve the transmission planning;
- 6.1.2 Study and analyze the system impact studies and supporting initiatives such as SGGP, which aims to modernize or enhance the Philippine transmission grid;
- 6.1.3 Ensure alignment between generation, distribution, and transmission development in the TDP, so that new power plants can be connected to the grid without delays caused by incomplete or insufficient transmission facilities; and
- 6.1.4 Ensure the confidentiality of proprietary and commercially sensitive data provided by stakeholders, government agencies, GenCos, DUs and other entities, and ensure that the same shall solely be used for planning purposes.

6.2 DOE

- 6.2.1 Through the DOE-EPIMB, shall prepare, among others, the following system requirements as major inputs for the TDP:
 - 6.2.1.1 National Electricity Demand Forecast, Electricity Sales & Consumption Forecast, and Gross Power Generation;
 - 6.2.1.2 Latest Generation Capacity Expansion Plan;
 - 6.2.1.3 List of Private Sector Initiated Power and ESS Projects;
 - 6.2.1.4 List of Existing Power Plants and ESS;
 - 6.2.1.5 List of Natural Gas Power Plant Projects, location and its awarded capacity for Mid-merit Auction;
 - 6.2.1.6 List of Delisted Conventional Power Projects; and
 - 6.2.1.7 List of Decommissioned Power Plants.
- 6.2.2 Through the DOE-Renewable Energy Management Bureau, Oil Industry Management Bureau, Energy Resource Development Bureau, and Energy Utilization Management Bureau, provide the following data to NGCP and TRANSCO:
 - 6.2.2.1 Upstream facilities;
 - 6.2.2.2 Renewable Energy facilities and projects;
 - 6.2.2.3 Integrated Renewable Energy and Energy Storage Systems;
 - 6.2.2.4 Generation Plant winners from GEA, its winning capacity and location;
 - 6.2.2.5 Pioneer NPP siting and facilities, its awarded capacity, and type of reactor technology;
 - 6.2.2.6 List of Terminated Service Contract; and
 - 6.2.2.7 National Renewable Energy Program;

Other relevant data pertaining to energy resources, facilities, projects, programs, and developments, as may be necessary for transmission planning, and subject to the approval of the DOE.

6.3 TRANSCO

- 6.3.1 Fully cooperate with TNP and SO in the preparation of the assumptions of initial determination of proposals for expansion, upgrading, additional installations, and power system studies in accordance with Section 4 of this Policy;
- 6.3.2 Ensures that the SGGP and other relevant plans and programs of the DOE are incorporated and considered in the TDP;
- 6.3.3 Conduct periodic studies and simulations on the integration of Grid-supportive inverters, Grid-scale batteries, Distributed energy resources, emerging technologies, and technologies that are capable to provide Ancillary Services and provide the recommendations to the TNP and SO;
- 6.3.4 Participate in the public consultations of TNP and SO on the draft TDP and assess the merits of the comments and recommendations from the stakeholders in the preparation of the final draft of the TDP; and
- 6.3.5 Monitor the compliance of the TNP and SO with its concession agreement and address any disputes and exercise of government authority, such as eminent domain, when needed for transmission expansion projects.

6.4 TNP and SO

- 6.4.1 Together with TRANSCO, lead and prepare the power system studies in the initial determination of proposals under Section 4 of this Policy and prepare the draft of the TDP. This includes technical guidance on transmission system constraints, including the feasibility study of different technologies and issues affecting project implementation, such as permitting delays and other relevant data and information, as necessary, particularly during the review of the TDP;
- 6.4.2 Incorporate the SGGP and other relevant plans and programs of the DOE in the TDP;
- 6.4.3 To periodically assess and review the overall Reliability of the Grid, both existing and planned, including other reliability assessment as requested by the DOE and/or ERC;
- 6.4.4 Conduct periodic studies and simulations on the integration of Grid-supportive inverters, Grid-scale batteries, Distributed energy resources, and other emerging technologies. These shall assess Grid stability, infrastructure capacity, proximity to RE resources, load centers, congestion points, transmission availability, and ancillary services capability;

6.4.5 In addition to the data from the DOE, gather other relevant information from the customers and other stakeholders that may be deemed necessary in the preparation of the TDP;

6.4.6 Provide monthly summary of completed System Impact Study and other technical data/documents, including the updated power system models of the power grids used for the power system studies to the DOE and TRANSCO for the performance of TDP activities; and

6.4.7 Coordinate or conduct jointly with TRANSCO the public consultations on the TDP.

6.5 IMO

Shall identify the existing and foreseen congestion in the transmission system, determine all required information including associated cost estimates, and provide recommendations for consideration of the review and preparation of the TDP.

6.6 NEA

Shall review and evaluate the EC's Distribution Development Plan, including the Capital Expenditures Projects and determine the necessary transmission grid support to accommodate the growing demand of the ECs and recommend the same in the review of the draft of the TDP.

6.7 NPC

Shall identify and recommend transmission capacity addition and expansion, including interconnection projects needed for the interconnection of Small Island and Isolated Grids in the main Grid, particularly during the review of the draft of the TDP.

SECTION 7. TDP Submission and Review Process

7.1. Submission of the Initial TDP

TRANSCO or its Buyer or Concessionaire shall submit the Initial TDP, together with the supporting technical studies, simulation results, planning assumptions, and other supporting documents required under this Circular, to the DOE on or before 31 March of each year.

7.2. Preliminary Review

Upon receipt of the initial submission of the TDP, the DOE shall conduct a preliminary review to determine its completeness and compliance with the requirements of this Circular. The preliminary review shall be completed not later than 30 April of the same year.

The DOE may require the submission of additional information, supporting documents, technical studies, simulation models, planning assumptions, or other relevant data, as necessary.

936
937 **7.3. Stakeholder Consultations**

938 Simultaneous with the conduct of the preliminary review by the DOE,
939 TRANSCO or its Buyer or Concessionaire shall conduct public
940 consultations for all concerned stakeholders in Luzon, Visayas, and
941 Mindanao, within forty-five (45) calendar days upon initial submission of the
942 TDP, to obtain comments, recommendations, and other relevant inputs
943 from stakeholders.

944
945 Accordingly, a Stakeholder Consultation Report shall be prepared by
946 TRANSCO or its Buyer or Concessionaire, containing the comments
947 received, the corresponding responses, and the revisions incorporated into
948 the TDP, if any.

949
950 **7.4. Submission of the Final TDP**

951 TRANSCO or its Buyer or Concessionaire shall submit the Final TDP,
952 together with the Stakeholder Consultation Report and the responses to the
953 DOE's preliminary review comments, within thirty (30) calendar days upon
954 receipt of the comments and recommendations of the DOE.

955
956 **7.5. Endorsement and Technical Review of the TDP-RT**

957 The DOE shall endorse the Final TDP to the TDP-RT for technical review
958 and evaluation in accordance with Section 6 of this Circular. Within thirty
959 (30) calendar days upon receipt of endorsement of the DOE, the TDP-RT
960 shall complete its review and submit its findings and recommendations to
961 the DOE, which shall form part of the basis for the DOE's action on the Final
962 TDP.

963
964 **7.6. Approval of the TDP**

965 Upon consideration of the recommendation of the TDP-RT and
966 determination that the Final TDP is consistent with the requirements of this
967 Circular, the PGC, and applicable laws, rules, regulations, and national
968 energy policies, the DOE shall issue the appropriate approval or directive
969 upon completion of the review process.

970
971 In the event that the DOE determines that further revisions or supporting
972 information are necessary, it may require TRANSCO or its Buyer or
973 Concessionaire to further revise and resubmit the Final TDP prior to its
974 approval.

975
976 **SECTION 8. Regulatory Support.** The ERC shall provide the following regulatory
977 support:

- 978
979 8.1. Establish the timeline in the evaluation and approval for the components of
980 the transmission projects in the TDP, rates and tariffs, including issuance of
981 Certificates of Compliance for new facilities;
- 982
983 8.2. Issue applicable standards and measurement to be used to gauge the
984 effectiveness and efficiency of the transmission projects in the TDP;
- 985
986 8.3. Review, update, and harmonize, as necessary, all resolutions and
987 regulations relevant to the implementation stated under this Policy and

promulgate guidelines on the same. This includes promoting competition and efficient investment in the transmission sector by regulating access to the grid and implementing mechanisms such as performance-based regulation for capital expenditures on system upgrades;

8.4. Conduct performance audits of the TNP and SO, enforcing service standards such as reliability metrics under the Philippine Grid Code, and resolving disputes related to transmission expansion or cost recovery;

8.5. Participate, at its discretion, in public stakeholder consultations for major transmission projects to provide regulatory guidance, ensure that consumer interest is considered, and promote reliable and affordable electricity service;

8.6. In the exercise of its power and functions under the EPIRA, establish and impose fines and/or penalties for non-compliance of the TNP and unreasonable delays of the implementation and completion of the transmission projects to support the enforcement of this policy; and

8.7. Perform other regulatory functions as may be necessary for the effective implementation of this Circular, consistent with applicable laws, rules, and regulations.

Section 9. Continuing Obligations. – Nothing herein shall be construed as releasing the Concessionaire from its obligations nor adding to, removing, or otherwise revising any of its responsibilities and mandates under the Concession Agreement, its franchise, the EPIRA, the Public Service Act, and other applicable laws and regulations.

Section 10. Repealing Clause. – All rules and regulations, or any portion thereof, that are inconsistent with this Policy are hereby repealed or modified accordingly.

Section 11. Separability Clause. – If any part or provision of this Circular is declared invalid or unconstitutional, other parts not affected thereby shall continue to be in full force and effect.

Section 12. Effectivity. – This Circular shall take effect fifteen (15) days upon its publication in the Official Gazette or in two (2) newspapers of general circulation. A copy of this Circular shall be filed with the University of the Philippines Law Center – Office of National Administrative Register (UPLC-ONAR).

Issued on _____ at Energy Center, Bonifacio Global City, Taguig City.

SHARON S. GARIN
Secretary