



Republic of the Philippines

DEPARTMENT OF ENERGY

DEPARTMENT CIRCULAR NO. DC2023-00-0000

PRESCRIBING THE POLICY FOR ENERGY STORAGE SYSTEM IN THE ELECTRIC POWER INDUSTRY

WHEREAS, Republic Act No. 7638 or the “*Department of Energy Act of 1992*” established, among others, the power and function of the Department of Energy (DOE) to establish and administer programs for the exploration, transportation, marketing, distribution, utilization, conservation, stockpiling, and storage of energy resources of all forms, whether conventional or non-conventional;

WHEREAS, Section 37 of the Republic Act No. 9136, otherwise known as “*Electric Power Industry Reform Act of 2001*” or EPIRA, provides that the DOE shall undertake, among others, the formulation of 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 and ensure the reliability, quality and security of supply of electric power;

WHEREAS, on 01 August 2019, the DOE issued Department Circular (DC) No. DC2019-08-0012 which aims to introduce Energy Storage System (ESS) technologies to serve a variety of functions in the generation, transmission, and distribution of electric energy;

WHEREAS, Republic Act No. 9513 also known as “*Renewable Energy Act of 2008*” promotes the development, utilization, commercialization of Renewable Energy (RE) resources;

WHEREAS, the Philippines aspires to increase the contribution of RE by at least 35.0 percent in the total generation mix by 2030 and looking further at achieving at least 50% share by 2040.

WHEREAS, with increasing influx of RE Plants particularly Variable RE, necessitates enhancement of the existing ESS policy and regulation to accommodate the development of ESS in support to the renewable energy integration and grid stability;

WHEREAS, on 22 November 2022, the DOE, as part of its policy review, conducted a Focus Group Discussion and solicited issues encountered and recommendations to enhance the operationalization of DC2019-08-0012.

NOW THEREFORE, for and in consideration of the foregoing premises, the DOE hereby issues, adopts and promulgates this Circular governing ESS:

40 **SECTION 1. General Policies and Principles.** The DOE recognizes the applications
41 and the benefits of ESS as an emerging technology in the improvement of the electric
42 power system in accordance with the objective of ensuring the quality, reliability,
43 security and affordability of the supply of electric power. Hence, to maximize these
44 benefits, ESS shall operate within the framework of:

- 45 1.1. Power Generation Business whose facilities supply electricity or provide
46 reliability services to the Grid or the distribution system;
47
- 48 1.2. Compliance with the Central Dispatch, as applicable, by the System
49 Operator to Grid-connected and embedded ESS with material impact to the
50 Grid in the interest of achieving economic operation and maintenance of
51 quality, stability, reliability and security of the transmission system;
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- 53 1.3. Compliance with the EPIRA and its IRR, Philippine Grid Code (PGC),
54 Philippine Distribution Code (PDC), Wholesale Electricity Spot Market
55 (WESM) Rules and its Market Manuals, Philippine Electrical Code and
56 other pertinent issuances by the DOE, Energy Regulatory Commission
57 (ERC) and other relevant government instrumentalities having authority
58 over the Grid's reliability and supply security; and
59

60 **SECTION 2. Definition of Terms.** The terms as used in this Circular shall have the
61 following meaning:

- 62 2.1. **"Ancillary Services" or "AS"**, as defined in DOE DC No. DC2021-10-
63 0031, refers to services that support the transmission and/or distribution
64 capacity and energy that are essential in maintaining Power Quality and the
65 reliability of the Grid;
66
- 67 2.2. **"Distributed Energy Resources" or "DER"** refer to power sources
68 connected to the distribution system or electrical system of the End-Users,
69 that could be aggregated to meet a demand;
70
- 71 2.3. **"Electric Power Industry Participant"** refers to any person or entity
72 engaged in the generation, transmission, distribution or supply of electricity;
73
- 74 2.4. **"Embedded Generator" or "EG"** refers to generating units that are
75 indirectly connected to the Grid through the distribution system that supplies
76 power to its host DU or the Grid;
77
- 78 2.5. **"End-User"** refers to any person or entity requiring the supply and delivery
79 of electricity for its own use;
80
- 81 2.6. **"Energy Storage System" or "ESS"** refers to a facility capable of
82 absorbing energy generated from an RE Plant or from a generation facility
83 connected to the Grid or Distribution System, and injecting stored energy
84 when prompted, needed to ensure reliability and balanced power system:
85

86 ESS technologies shall include, but not limited to:
87

- 88 2.6.1. **“Battery Energy Storage System” or “BESS”** – capable of
89 storing electric energy electrochemically from which it is able to
90 charge or discharge electric energy;
91
- 92 2.6.2. **“Compressed Air Energy Storage” or “CAES”** – uses electric
93 energy to inject high-pressure air containers. When energy is
94 required, the pressurized air is heated and expanded in an
95 expansion turbine driving a generator for power production;
96
- 97 2.6.3. **“Flywheel Energy Storage or “FES”** – uses electric energy to
98 accelerate a rotating mass, called a “rotor”, to store kinetic energy.
99 Energy is extracted from the system by drawing down the kinetic
100 energy from the rotor; and
101
- 102 2.6.4. **“Pumped-Storage Hydropower or “PSH”** – uses electric energy
103 to pump water from a lower elevation reservoir to a higher elevation
104 reservoir. When required, the water flows back from the upper to
105 the lower reservoir, powering a turbine with a generator to produce
106 electric energy.
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- 108 2.7. **“Electric Power Industry Reform Act of 2001” or “EPIRA”** refers to
109 Republic Act No. 9136;
110
- 111 2.8. **“Generating Plant + ESS”** refers to a combination of Conventional Plant
112 and/or RE Plant, and an ESS, where the ESS is charged either from the
113 Generation Plant/s or from the grid;
114
- 115 2.9. **“Grid”** refers to the high voltage backbone system of interconnected
116 transmission lines, substations and related facilities, located in each of
117 Luzon, Visayas and Mindanao, or as may be determined by the ERC in
118 accordance with Section 45 of the EPIRA;
119
- 120 2.10. **“Integrated Non-RE Plant + ESS”** refers to a combination of a
121 Conventional Plant and an ESS, where the ESS will not charge from the
122 grid and that its P_{max} will be limited to the plant capacity;
123
- 124 2.11. **“Integrated RE Plant + ESS”** refers to a combination of RE Plant and an
125 ESS, where the ESS is solely charged by the RE Plant/s;
126
- 127 2.12. **“Market Operator” or “MO”** refers to the entity responsible for the
128 operation of the WESM in accordance with the WESM Rules;
129
- 130 2.13. **“Microgrid System”** refers to a group of interconnected loads and a
131 generation facility or Decentralized Power Generation with clearly defined
132 electrical boundaries that acts as an integrated power generation and
133 distribution system, whether or not connected to a distribution or
134 transmission system;
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- 136 2.14. **“Power Quality”** refers to the quality of the voltage, including its frequency
137 and resulting current, that are measured in the Grid, distribution system, or
138 any user system during normal conditions;
139
- 140 2.15. **“Microgrid Service Provider” or “MGSP”**, refers to a natural or juridical
141 person whose business includes the installation, operation, and
142 maintenance of microgrid systems in unserved or underserved areas
143 nationwide;
144
- 145 2.16. **“Renewable Energy Act of 2008” or “RE Act”**, refers to Republic Act No.
146 9513;
147
- 148 2.17. **“Small Grid”** refers to the backbone system of interconnected High
149 Voltage lines or Medium Voltage lines, substations and other related
150 facilities not connected to the National Grid in Luzon, Visayas and
151 Mindanao;
152
- 153 2.18. **“Small Grid Owner” or “SGO”** refers to the party that owns the backbone
154 Transmission or Sub-transmission or Distribution System, and is
155 responsible for planning, operations and maintaining adequate capacity;
156
- 157 2.19. **“System Operator or “SO”** refers to the entity responsible for generation
158 dispatch, or the implementation of the generation dispatch schedule of the
159 MO, the procurement of AS, and operation to ensure safety, Power Quality,
160 stability, reliability and security of the Grid;
161
- 162 2.20. **“Small Grid System Operator” or “SGSO”** refers to the party responsible
163 for generation dispatch and real-time control of the power system in off-grid
164 areas through the management of operating reserves, reactive power
165 support, black start and other operating requirements to ensure safety,
166 Power Quality, stability, reliability and security of the Small Grid;
167
- 168 2.21. **“Stand-alone Energy Storage System”** refers to an ESS that is
169 connected to and stores energy sourced from the Transmission or
170 Distribution System;
171
- 172 2.22. **“Transmission Network Provider” or “TNP”** refers to the party that is
173 responsible for maintaining adequate Grid capacity in accordance with the
174 provisions of the Philippine Grid Code.
175

176 **SECTION 3. Scope.** This Circular shall apply to the following Electric Power Industry
177 Participants:

- 178 3.1 Generation Companies (GenCos) owning and/or operating ESS;
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- 180 3.2 Distribution Utilities (Dus);
181
- 182 3.3 Directly Connected Customers (DCCs) owning and operating ESS;
183
- 184 3.4 End-Users owning and operating ESS;

- 185
186 3.5 Microgrid Service Provider (MGSP);
187
188 3.6 Transmission Network Provider (TNP);
189
190 3.7 System Operator (SO); and
191
192 3.8 Market Operator (MO).
193

194 **SECTION 4. Purposes of ESS.** ESS proponents shall apply and register their ESS
195 for one or more of the following purposes:

196 **4.1. Provision of Ancillary Services**

197
198 ESS may be used to support the transmission capacity and energy that are
199 essential in maintaining power quality and the reliability of the Grid.
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201 **4.2. Provision of Energy through Bilateral Supply Contracts or Trading in**
202 **the WESM**

203
204 Generation Companies may utilize ESS for selling power through
205 contractor trading energy in the WESM.
206

207 **4.3. Manage the Variability of Renewable Energy**

208 Generation Companies may integrate ESS in its VRE facilities for the
209 purpose of mitigating its variable generation output and support the Grid in
210 maintaining power quality and reliability. The installation of ESS to a Feed-
211 in-Tariff (FIT)-eligible VRE should not in any way increase the VRE plant's
212 capacity and generation entitled to FIT. The ESS shall only be charged from
213 the VRE facilities' output.

214 **4.4. Auxiliary Load Management for Generation Companies**

215
216 ESS when integrated in the power system of a Generation Company can
217 be used to augment supply needed during hours of high demand enabling
218 higher energy dispatch.
219

220 **4.5. Transmission and Distribution Facility Upgrades Deferral**

221 ESS when connected to appropriate nodes may defer the need for
222 additional transmission and distribution facility upgrades by supplying the
223 peak demand of grid/end-users through ESS.

224 **4.6. Transmission and Distribution Utility Power Quality Management**

225
226 Involves the process of using ESS to improve the power quality of a
227 Transmission and Distribution System.
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229 **4.7. End-User Demand Management**

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231 ESS can be used to manage end-user energy requirements.

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SECTION 5. Duties and Responsibilities.

5.1. **Generation Companies.** Generation Companies may own a stand-alone ESS, an Integrated RE Plant or a Generation Plant + ESS, and shall have the following responsibilities:

- 5.1.1. For Integrated RE plant + ESS and Integrated Conventional Plant + ESS, a single billing and monitoring facility is only required to measure export energy of such facility that are injecting energy to the grid;
- 5.1.2. For Generating Plant + ESS, a separate metering and monitoring facilities shall be installed to measure the import and export energy of such facility that are absorbing energy from and injecting energy to the grid;
- 5.1.3. Shall submit to the DOE the single line diagram of the proposed facility which shall include nameplate capacities of both RE or generating plant and the ESS and the location of metering facilities, for the DOE’s determination of the configuration of the system; and
- 5.1.4. Submit Monthly Operation Report (MOR) including the operation of stand-alone ESS, an Integrated RE Plant or a Generation Plant + ESS, and other appropriate reportorial requirements, every last day of the following month.
- 5.1.5. All Generating Plants with ESS, except for the ESS component of the Integrated RE Plant + ESS, shall register in the WESM including embedded generators intending to export energy to the grid.

5.2. **Distribution Utilities** shall have the following responsibilities:

- 5.2.1. Develop or enhance appropriate internal business procedures for the connection of ESS to its distribution network, consistent with the PGC, PDC, test and commissioning policies, conduct of distribution impact studies and other applicable regulations and guidelines;
- 5.2.2. Ensure that the connection and dispatch of ESS within its distribution network is compliant with the standards set forth in the PGC, PDC and other applicable guidelines;
- 5.2.3. Notify the TNP upon receipt of the connection application of an ESS with capacities of 10MW and above for Luzon, or 5MW and above for Visayas and Mindanao;

- 279 5.2.4. Include in its Monthly Operation Report (MOR), and other
280 appropriate reportorial requirements, the operation of DU-owned
281 and operated ESS; and
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- 283 5.2.5. Incorporate the characteristics of an ESS, as it absorbs and injects
284 energy, in the preparation of the Distribution Development Plan.
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- 286 5.3. **End-users.** End-users may own and operate Generating plant + ESS for
287 the purpose of managing their energy demands, subject to permitting
288 requirements such as electrical permit from the local government unit, and
289 operating requirements of the DU, provided that the capacity is within the
290 applicable threshold in the case of distributed energy resource and net
291 metering, and shall have the following responsibilities:
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- 293 5.3.1. Provide the following information to the DU as part of the
294 data/documentary requirements:
- 295 5.3.1.1 Type of ESS;
296 5.3.1.2 Capacity and rate of charge and discharge;
297 5.3.1.3 Proposed application/purpose/operation; and
298 5.3.1.4 Other information as maybe required by the DU.
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- 300 5.4. **Microgrid Service Provider.** A Microgrid Service Provider may own and
301 operate ESS in conjunction with RE-based generating facilities to provide
302 continuous electric service to households in the form of either microgrid or
303 DER, as may be applicable, in consonance with the total electrification
304 program of the government.
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- 306 5.5. **Transmission Network Provider and Small Grid Owner** shall have the
307 following responsibilities:
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- 309 5.5.1 For TNP to incorporate, the recommended sizing and siting of ESS,
310 in the Transmission Development Plan, taking into consideration
311 existing transmission capacity and planned upgrading; and
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- 313 5.5.2 For both TNP and SGO to consider ESS as an alternative solution
314 to address the transmission congestion and transmission facilities
315 upgrade deferment.
316
- 317 5.6. **System Operator and Small Grid System Operator.** A SO and Small Grid
318 SO may own and operate a BESS or FES for regulating reserve
319 requirements and shall have the following responsibilities:
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- 321 5.6.1 Develop, in coordination with stakeholders, the following:
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- 323 5.6.1.1 Testing standard and procedure for ESS; and
324 5.6.1.2 Accreditation process on the approval of ESS.

325 Such accreditation and testing standard and procedure shall be
326 submitted to the ERC for approval and furnish copy to the DOE
327 within thirty (30) days upon the effectivity of this Circular;

328 5.6.2 Optimize the addition of ESS for AS application and ensure proper
329 allocation for each type of AS consistent with the Grid requirement;

330
331 5.6.3 Include in its Daily Operation Report the operation of ESS as an AS
332 Provider; and
333

334 5.7 **Market Operator** shall have the following responsibilities:

335
336 5.7.1 Submit to the Rules Change Committee, within one (1) month
337 upon effectivity of this Circular, proposed changes to the WESM
338 Rules and Market Manuals in accordance with the policy provided
339 herein;

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341 5.7.2 Ensure that the technical parameters identified in the COC and
342 registered in the WESM shall be as follows:
343

ESS	P _{Max} and Ramp Rate
Stand Alone ESS	ESS Capacity and Ramp Rate
Generating Plant + ESS	Generating Plant Capacity+ ESS Capacity and Ramp Rate
Integrated RE + ESS	RE Capacity and Ramp Rate
Integrated Non-RE + ESS	Conventional Plant's Capacity and Ramp Rate

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345 5.7.3 Submit monthly reports to the DOE with respect to the status of
346 registration of ESS in the WESM and their impact to the market
347 operations; and
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349 5.7.4 Recommend policies, as may be necessary, to address issues
350 relating to market operations brought by ESS adoption and
351 operations.

352 **SECTION 6. Permitting and Licensing Requirements.** The following shall govern
353 the licensing requirements of ESS:

354
355 6.1 All Stand Alone ESS shall secure a Certificate of Compliance (COC) from
356 the ERC pursuant to existing guidelines on licensing of generation facilities;
357

358 6.2 All Generation Companies intending to operate a Stand-alone ESS or an
359 Integrated RE Plant + ESS shall apply only for a single COC with the ERC;
360

361 6.3 All ESS shall comply with the rules and regulations on Safety, Health,
362 Environmental Standards and Proper Disposal enforces by appropriate
363 government agencies; and
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365 6.4 All ESS proponents shall secure an Environmental Compliance Certificate
366 or any other equivalent document from the Department of Environmental
367 and Natural Resources (DENR) and other requirements by relevant
368 government agencies pursuant to their guidelines.

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370 **SECTION 7. Connection and Operational Requirements.** The following shall
371 govern the connection and operational requirements of ESS:

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373 7.1 All ESS connected to the transmission system shall comply with the
374 connection and operational requirements for Generation Companies
375 pursuant to the PGC, WESM Rules and relevant Market Manuals, and other
376 relevant policies and regulations promulgated by the ERC and DOE;
377

378 7.2 All ESS connected to the distribution system shall comply with the
379 connection and operational requirements, for Embedded Generation
380 Companies, of the PDC and other relevant policies and regulations
381 promulgated by the ERC and DOE;
382

383 7.3 All ESS connected to the distribution system and mandated to register in
384 the WESM shall comply with the connection and operational requirements,
385 for Embedded Generation Companies pursuant to the PDC, PGC, WESM
386 Rules and relevant Market Manuals and other relevant policies and
387 regulations promulgated by the ERC and DOE;
388

389 7.4 All ESS connected or intending to connect to Microgrid Systems shall
390 comply with connection and operational requirements as provided by
391 applicable guidelines of the ERC; and
392

393 7.5 All ESS connected or intending to connect to Off-Grid Areas shall comply
394 with DOE Department Circular No.2019-01-0001 or the DC prescribing the
395 omnibus guidelines on enhancing off-grid power development and
396 operation.
397

398 **SECTION 8. Market Registration and Participation.** The following shall govern the
399 registration and participation of ESS in the WESM:
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401 8.1. The following ESS shall be registered separately in the WESM and,
402 thereafter, be subjected to central dispatch by the SO:
403

404 8.1.1. ESS that are connected to the Transmission System and are
405 absorbing and injecting energy into it;
406

407 8.1.2. ESS connected to the Distribution System and are absorbing and
408 injecting energy into it, with a capacity equal to or above the
409 following regional thresholds:
410

411 8.1.2.1. 10 MW for Luzon Grid;

412 8.1.2.2. 5 MW for Visayas Grid; and

413 8.1.2.3. 5 MW for Mindanao Grid

414

415 ESS connected to the Distribution System, which has a capacity
416 less than the above threshold may register in the WESM on a
417 voluntary basis;

418

419 8.2. The DOE, in coordination with the MO and SO, shall regularly review the
420 criteria for mandatory registration, and recommend revision as may be
421 necessary.

422

423 **SECTION 9. Incentives for Integrated RE Plant + ESS.** Energy stored and
424 dispatched from Integrated RE Plant + ESS shall be considered renewable energy
425 and shall be eligible of the following incentives, including but not limited to:

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427 9.1. The RE developer may avail the incentives under the RE Act for its
428 Integrated RE Plant + ESS such as income tax holiday, duty-free
429 importation, zero-rated VAT, and other applicable incentives; and

430

431 9.2. The Integrated RE Plant + ESS, as applicable, shall have preferential
432 dispatch, but it can opt to be registered as scheduled generating unit.

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434 **SECTION 10. Regulatory Support.** The ERC is hereby directed to assist DOE in the
435 implementation of this Circular, specifically:

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437 10.1 Issue appropriate and applicable cost recovery mechanism and pricing
438 structure in accordance with this Circular;

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440 10.2 Ensure that the SO establishes the appropriate and applicable testing and
441 accreditation of standards and procedures for the deployment of ESS;

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443 10.3 Ensure the inclusion of ESS-related rules, procedures, requirements, and
444 standards in the Open Access Transmission Service Rules, Distribution
445 Service Open Access Rules, AS Procurement Plan, PGC, PDC, and
446 Philippine Small Grid Guidelines; and

447

448 10.4 Facilitate the entry and participation of Third Party/Parties in the
449 accreditation and testing standard and procedure for ESS as AS Providers.

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451 **SECTION 11. Standards and Safety Codes.** The DOE, recognizing the necessity to
452 ensure successful and safe deployment of ESS in coordination with the Professional
453 Regulatory Commission, DENR, Department of Labor and Employment, the
454 Department of Trade and Industry-Bureau of Product Standards, other relevant
455 government agencies and concerned stakeholders, shall consolidate and/or develop
456 all occupational safety and health standards for ESS technologies and ESS
457 installation, without prejudice to compliance with other relevant rules and regulations
458 of the other agencies.

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460 **SECTION 12. Proper Disposal and Recycling of ESS.** ESS proponents are
461 mandated to recycle and properly dispose ESS facilities and components in
462 compliance with the DENR Administrative Order no. 2013-22 or other related
463 issuances pursuant to the R.A. No. 6969, otherwise known as the “Toxic Substances
464 and Hazardous and Nuclear Waste Control Act of 1990”

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466 **SECTION 13. Repealing Clause.** All rules and regulations, or any portion thereof, that
467 are inconsistent with this Circular are hereby repealed or modified accordingly.
468 Correspondingly, DC2019-08-0012 is hereby repealed.

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470 **SECTION 14. Separability Clause.** If any section or provision of this Circular is
471 declared unconstitutional or invalid, the other parts or provisions hereof which are not
472 affected thereby shall continue to be in full force and effect.

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474 **SECTION 15. Effectivity.** This Circular shall take effect fifteen (15) days after its
475 publication in two (2) newspapers of general circulation, and copies of this Circular
476 shall be filed with the University of the Philippines Law Center-Office of the National
477 Administrative Register.

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479 Signed this _____ day of _____ 2023 at DOE, Energy Center, Rizal
480 Drive, Bonifacio Global City, Taguig City, Metro Manila.

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RAPHAEL P.M. LOTILLA

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Secretary