Republic of the Philippines
DEPARTMENT OF ENERGY
(Kagawaran ng Enerhiya)

DEPARTMENT CIRCULAR NO. DC2022-06-0023

ADOPTING GENERAL AMENDMENTS TO THE WESM RULES AND VARIOUS MARKET MANUALS ON THE ENHANCEMENTS TO MARKET OPERATOR AND SYSTEM OPERATOR PROCEDURES

WHEREAS, Sections 30 and 37(f) of the Electric Power Industry Reform Act (EPIRA) provides that the Department of Energy (DOE), jointly with the electric power industry participants, shall establish the Wholesale Electricity Spot Market (WESM) and formulate the detailed rules governing the operations thereof;

WHEREAS, on 28 June 2002, pursuant to its mandate, in consultation with the electric power industry participants, the DOE promulgated Department Circular DC2002-06-0003 or the WESM Rules, as amended, which provides that any changes, amendments, and modifications to the WESM Rules, Retail Rules and Market Manuals shall be undertaken in accordance with the provisions of Chapter 8 thereof;

WHEREAS, Clause 3.3.3.2 of the WESM Rules mandates the System Operator to provide adequate ancillary services for each region by entering into contracts with Ancillary Services Provider and/or competitive spot market trading;

WHEREAS, on 23 October 2015, the DOE promulgated Department Circular No. DC2015-10-0015 providing policies for the enhancements to WESM design and operations which includes among others the change from a 1-hour dispatch interval to a 5-minute dispatch interval and the implementation of the co-optimized energy and reserves market;

WHEREAS, on 04 December 2019, the DOE promulgated Department Circular No. DC2019-12-0018 providing the general policy framework governing the provision and utilization of ancillary services in the grid which specified among others, the criteria for the commercial operation of the WESM reserve market;

WHEREAS, on 13 May 2021, the DOE promulgated Department Circular No. DC2021-03-0009, providing the policy framework for the operationalization of the Reserve Market and mandated the Market Operator to submit rules changes necessary for the co-optimized energy and reserve market;

WHEREAS, in a letter dated 29 November 2021, after due process, the PEM Board formally endorsed to the DOE the proposed amendments to the WESM Rules and various Market Manuals intended to enhance the processes between the Market Operator, System Operator, and Trading Participants and establish a framework where all WESM stakeholders are enjoined to independently perform their duties and responsibilities to ensure grid security and reliability upon the implementation of the 5-minute dispatch interval;

WHEREAS, on 24 February 2022, the DOE posted the draft Department Circular adopting the proposed amendments in the DOE website to solicit comments from the market participants and other interested parties;

WHEREAS, on 15 and 16 March 2022, the DOE conducted nationwide virtual public consultations on the abovementioned proposed amendments to solicit inputs and consider comments of stakeholders in the finalization of the same;

NOW THEREFORE, after careful review of the PEM Board-approved proposal and the comments and recommendations received on the same, the DOE, pursuant to its authority under the EPIRA and the WESM Rules, hereby adopts, issues, and promulgates the following amendments to the WESM Rules and various Market Manuals for the enhancements of Market Operator and System Operator procedures:

Section 1. Amendments to the WESM Rules. The provisions of the WESM Rules are hereby amended to read as follows:

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3.2.1 Market Network Model

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3.2.1.5 Except for integration of the new network, other alteration under Clause 3.2.1.4 shall be implemented in accordance with the established business processes of the *Market Operator*. The *Market Operator* shall regularly inform the *PEM Board* of any changes made to the *Market Network Model*.

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3.5.13 Overriding Constraints

3.5.13.1. The *System Operator* shall advise the *Market Operator* of the actions it has taken in relation to the foregoing, including but not limited to information necessary for the proper settlement of affected *generating units*, and the *Market Operator* shall publish the said information no later than one (1) week from the relevant trading day. *Trading Participants* shall review the information and notify the *Market Operator* of any discrepancies no later than two (2) weeks from the date of publication, otherwise the information contained in the report shall be deemed final.

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3.8.2 Responsibilities of the System Operator

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for: OLGB

3.8.2.2 After each one (1) hour interval, in accordance with the *timetable*, the *System Operator* shall advise the *Market Operator* of:

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The *System Operator* shall likewise provide a *dispatch instruction* report to the *Market Operator*, in accordance with the *timetable*, detailing among others the circumstances and *dispatch* levels of units that were *constrained-on* or *constrained-off* or put on must-run during that one (1) hour *interval*.

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3.8.3 System Operator Implementation of Real-Time Dispatch

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3.8.3.4 Subject to Clause 3.8.3.3, if, in real-time, the available *generation* from a *must dispatch generating unit* differs from the available *generation* assumed in the *dispatch schedule* provided to the *System Operator*, the *System Operator* shall allow the *must dispatch generating unit* to generate at its *maximum available output*, and, if all available *regulating reserves* are exhausted during a *dispatch interval*, shall adjust the *dispatch* of other *generating units*, to compensate as required in accordance with relevant *Market Manuals*.

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3.8.5 Dispatch Conformance Standards

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3.8.5.6 In cases when a *generating unit* was identified as a *Must-Stop Unit*, the *System Operator* shall include such in the Dispatch Instruction Report.

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Chapter 11 Glossary

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Contingency Reserve. Synchronized generation capacity from qualified *generating units* and qualified *interruptible loads* allocated to cover the loss or failure of a synchronized *generating unit* or a transmission element or the power import from a circuit interconnection.

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Dispatchable Reserve. Generating capacity that is not scheduled for regular energy supply, *regulating reserve*, *contingency reserve*, or *interruptible loads* not scheduled for *contingency reserve*, and that are readily available for dispatch in order to replenish the *contingency reserve* service whenever a *generating unit* trips or a loss of a single transmission interconnection occurs.

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Regulating Reserve. Readily available and dispatchable generating capacity that is allocated exclusively to correct deviations from the acceptable nominal *frequency* caused by unpredicted variations in demand or generation output.

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Section 2. Amendments to the Market Manual on Dispatch Protocol. The following provisions of the Market Manual on Dispatch Protocol are hereby amended to read as:

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2.1 Definitions

2.1.2 The following words and phrases as used in this *Market Manual* shall have the following meaning:

a. Ancillary Service Procurement Agreement. A contractual agreement under which a *WESM Member*, registered as an *Ancillary Service Provider*, agrees with the *System Operator* to provide *ancillary services*.
b. Automatic Generation Control. The automatic regulation of the power output of *generating units* to respond to a change in system frequency or tie-line loading, as defined in the *Grid Code*, or to meet its *target loading level*.
c. Automatic Load Dropping (ALD). xxx
d. Availability. xxx
e. Bid xxx
f. Capability. xxx
g. Cascading Outages. xxx
h. Contingency. xxx
i. Contingency Reserve. Synchronized generation capacity from qualified *generating units* and qualified *interruptible loads* allocated to cover the loss or failure of a synchronized *generating unit* or a transmission element or the power import from a circuit interconnection.
j. Demand Control. xxx
k. Demand Control Imminent Warning. xxx
l. Dispatchable Reserve. Generating capacity that is not scheduled for regular energy supply, *regulating reserve*, *contingency reserve*, or *interruptible loads* not scheduled for *contingency reserve*, and that are readily available for dispatch in order to replenish the *Contingency Reserve* service whenever a *generating unit* trips or a loss of a single transmission interconnection occurs.
m. Disturbance. xxx

n. Frequency control. xxx
o. Generator. xxx
p. Load shedding. xxx
q. Manual Load Dropping. xxx
r. Market Management System (MMS). xxx
s. Maximum available capacity. xxx
t. MMS-Market Participant Interface (MPI). xxx
u. Multiple Outage Contingency. xxx
v. Offer. xxx
w. Operating margin. xxx
x. Preferential Dispatch Units. xxx
y. Real-Time Data. Contains analog measurements (MW and MVAR) of *generators* and *loads*, and the connection status of breakers and disconnect switches.
z. Real-Time Dispatch. xxx
aa. Red Alert. An alert issued by the *System Operator* when the *Contingency Reserve* is zero, a *generation* deficiency exists, or there is critical loading or imminent overloading of *transmission lines* or equipment.
bb. Regulating Reserve. Readily available and dispatchable generating capacity that is allocated exclusively to correct deviations from the acceptable nominal frequency caused by unpredicted variations in demand or generation output.
cc. Security. xxx
dd. Self-scheduled nomination. xxx
ee. Shutdown. xxx
ff. Stability. xxx
gg. Start-up. xxx
hh. System Integrity Protection Scheme (SIPS). xxx
ii. System Operator System Advisories. xxx
jj. Technical Constraint. xxx
kk. Voltage Control. xxx
ll. Voltage Instability. xxx
mm. Voltage Sag. xxx

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4.4 Day Ahead Projection (DAP)

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4.4.2 The activities shall be performed for the DAP, within the specified, using inputs for the covered study period of that specific DAP run, are provided in Table 2. The covered periods for all DAP runs within a day are provided in Table 3.

Table 2. DAP Timeline

Time	Activity	Responsible Party
Before [STPH1* -	Submit the most recent *self-scheduled nominations, bids* and	*Trading Participants*

Time	Activity	Responsible Party
10 minutes]	*offers* for all relevant hours of the DAP run	
Before [STPH1 + 1 minute]	Provide updates on the following, if any: 1. Outage Schedules 2. *Contingency* List 3. *Over-riding Constraints* 4. *Reserve* Requirements 5. Real-time *data* 6. *VRE Aggregated Generation Forecasts* 7. Forecasts on the *loading levels* of *Must dispatch generating units*	*System Operator*
Before [STPH1 + 1 minute]	Submit *load forecast* for the covered period	*Market Operator*
[STPH1 + 1 minute]	Execute DAP	*Market Operator*
Before [STPH1 + 25 minutes]	Publish DAP Results in the *MPI*	*Market Operator*
	Transmit DAP Results to *System Operator*	*Market Operator*

* STPH1 refers to the Start Time of the first Projected Hour (1) covered by the DAP run. For example, the Projected Hour of 0900H has a start time of 08:00 AM and an end time of 09:00 AM.

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4.5 Hour-Ahead Projection (HAP)

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4.5.2 The following activities shall be performed for the HAP, within the specified, using inputs for the covered study period of the specific HAP run.

Table 4. HAP Timeline

Time	Activity	Responsible Party
Before [STDI1** – 9 minutes]	Submit the most recent *self-scheduled nominations, bids* and *offers* for all relevant hours of the HAP run	*Trading Participants*
Before [STDI1 – 7 minutes]	Provide updates on the following, if any: 1. *Outage* Schedules 2. *Contingency* List 3. *Over-riding Constraints* 4. *Reserve* Requirements	*Market Operator*

for: RTB

Time	Activity	Responsible Party
	5. Real-time *data*	
Before [STDI1 – 7 minutes]	Submit *load forecast* for the covered period	*Market Operator*
[STDI1 – 7 minutes]	[STDI1 – 7 minutes]	*Market Operator*
Before [STDI1 – 2 minutes]	Publish HAP Results in the *MPI*	*Market Operator*
	Transmit HAP Results to *System Operator*	*Market Operator*

** STDI1 refers to the Start Time of the first *dispatch interval* (1) covered by the HAP run. For example, the 0815H *dispatch interval* has a start time of 08:10 AM and an end time of 08:15 AM. And if this is the first *dispatch interval* of the HAP run, then it will cover the period until 09:10 AM.

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4.6 Real Time Dispatch Schedule (RTD)

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4.6.2 The following activities shall be performed for the RTD, within the time specified, using inputs for the covered study period of that specific RTD run:

Table 5. RTD Timeline

Time	Activity	Responsible Party
Before [STDI1*** – 9 minutes]	Submit *self-scheduled nominations, bids* and *offers* for all relevant hours of the RTD run	*Trading Participants*
Before [STDI – 7 minutes]	Provide updates on the following, if any: 1. *Outage* Schedules 2. *Contingency* List 3. *Over-riding Constraints* 4. *Reserve* Requirements 5. Real-time *data*	*System Operator*
Before [STDI – 7 minutes]	Submit *load forecast* for the relevant *dispatch interval*	*Market Operator*
[STDI – 7 minutes]	Execute RTD	*Market Operator*
Before [STDI – 2 minutes]	Publish RTD Results in the *MPI*	*Market Operator*
	Transmittal of *Energy* and *Reserve Schedules*, and *WESM Merit Order Table* to the *System Operator*	*Market Operator*

*** STDI refers to the Start Time of the relevant *dispatch interval*.

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7.4 Data and Report Requirements

7.4.1 Market run data Inputs. For each *dispatch interval*, the *System Operator* shall provide or update the data, if necessary, which shall be used in the pre-dispatch projections and *real-time dispatch* market runs:

a. *Outage* schedules
b. *Contingency* lists
c. *Over-riding constraints*
d. *Reserve* requirements

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7.6 Over-riding Constraints

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7.6.4 *Generating units* undergoing regulatory and commercial tests shall submit to the *System Operator* the MW profile that details the MW target for each *dispatch interval* during its requested test period at least two (2) working days prior to the start of its testing.

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7.9 System Status

7.9.1 Real-Time Data. The *real-time data* represents the analog measurements, and connection status of breakers and disconnect switches in the *grid*. It is collected by the *Market Operator* from the *System Operator*'s EMS/SCADA.

a. The *real-time data* shall contain information as prescribed in the WESM Market Manual on Market Network Model Development and Maintenance - Criteria and Procedure.
b. The *real-time data* is an input to the MDOM which calculates the WAP, DAP, HAP, and RTD schedules. Specifically, the *real-time* data is used for the network configuration and nodal demand forecasting processes.

7.9.2 System Operator System Advisories. Further to the information provided in Section 7.4.2, these are messages issued by the *System Operator* depicting particular events or incidents that would transpire prior, during or after real time conditions.

7.10 Means of Submission/Transmittal

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7.10.2 The *System Operator* shall update the information contained in this Section considering the *timetable* set in Section 4.

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8.3 Responsibilities

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8.3.3 *Trading Participants* shall be responsible for:

a. Ensuring submission of *self-scheduled nominations, bids,* and *offers* as set out in the *WESM Rules* and in accordance with the *WESM timetable* and the procedures and requirements set forth in this Dispatch Protocol;
b. Submission of day-ahead *self-scheduled nominations* of its *must dispatch generating units* to the *System Operator* by 1300H; and
c. Maintaining their respective infrastructure to ensure access to the *MPI* of the *MMS*.

8.4 Data Inputs/Information Requirements

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8.4.2 The data inputs for the *market projections* are as follows:

a. *Generation energy* and *reserve offers, self-scheduled nominations*, and *demand bids*
b. *Demand/load forecast* determined in accordance with the *WESM* Load Forecasting Methodology
c. *Real-time data*
d. *Outage* schedules
e. *Reserve* Requirements
f. Contingency list
g. Transmission limits
h. *Over-riding constraints*
i. System advisories

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9.5 Data Inputs/Information Requirements

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Table 6. Summary of Inputs and Sources for the *Real-time dispatch*

INPUTS	SOURCE
Bids, Offers or *Self-scheduled nomination*	*Trading Participants*

for: LGB

INPUTS	SOURCE
Load forecast	*Market Operator*
Real-Time Data	*System Operator*
Outage Schedule	*System Operator*
Reserve Requirement	*System Operator*
Contingency List	*System Operator*
Over-riding constraints	*System Operator*
System Advisories	*System Operator*

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10.1 Background

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10.1.2 The *WMOT* is generated by stacking in an unconstrained manner of scheduled and unscheduled capacities, excluding negative quantities, *reserve schedules*, and *generators* on outage through the *market offers* submitted for *the real-time dispatch* runs. *Energy offer* blocks submitted by *generator Trading Participants* for a particular *dispatch interval* are arranged from lowest to the highest priced *offer* block, without considering any *constraints*. The *WMOT* stacks *energy offers* into two, namely, the *energy offers* that were scheduled (or "Offers Dispatched") and *energy offers* that were not scheduled (or "Offers Not Dispatched").

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10.3 Responsibilities

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10.3.2 Consistent with its obligations set out in this Dispatch Protocol in respect to the issuance of *dispatch instructions*, the *System Operator* shall be responsible for ensuring the application of the information provided in the *WMOT* in the real-time operation of the *grid*. The *System Operator* shall also be responsible for identifying the *generating units* that were issued *dispatch* instructions through the *dispatch* instruction report prepared in accordance with Sections 14.4.2 and 14.4.5.

10.4 Preparation of the WMOT

10.4.1 The *WMOT* shall be prepared using the *real-time dispatch schedules*, and the *offers*, excluding negative quantities, *reserve schedules*, and *generators* on outage of each *generating system* for which *offers* were submitted for the relevant *dispatch interval*. The specific information that will be used is as follows:

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10.4.5 The "Offers Dispatched" consists of the *energy offer* blocks, excluding *reserve schedules*, which have been scheduled in the RTD schedule for the *dispatch interval*. To the extent possible, the *dispatch schedule* of each *generating unit* will be split into corresponding *offer* blocks. The scheduled *offer* blocks will then be sorted and listed from the lowest-priced to the highest-priced scheduled *offer* block, with the lowest-priced scheduled *offer* block at the bottom of the list and the highest-priced at the top of the list. The *generating units* for which no *offers* are submitted but were scheduled are considered as price takers. Their respective MW schedules are included in this list and are placed at the bottom of the list with *must dispatch generating units* at the bottom and followed by *priority dispatch generating units* and *non-scheduled generating units* in that order.

10.4.6 The "Offers Not Dispatched" consists of the remaining *energy offers* of each available *generating unit* that are not scheduled or included in the RTD schedule for the *dispatch interval*. To the extent possible, the remaining *offers* will be sorted by *offer* blocks. The *offer* blocks not dispatched will then be sorted and listed from the lowest-priced to the highest-priced scheduled *offer* block, with the lowest-priced scheduled offer block at the bottom of the list and the highest-priced at the top of the list. Capacities that were not dispatched through their *energy offers* but have *reserve dispatch* targets shall be excluded from the list.

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10.6 Use of WMOT

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10.6.2 As far as practicable, and when *regulating reserves* have been exhausted, the *System Operator* shall issue re-dispatch instructions based on the *WMOT*. However, the *System Operator* may resort in an *out of merit dispatch* whenever the quality of the *grid frequency* is affected, or the *security* of the *grid* is at risk.

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11.1 Background

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11.1.6 The *System Operator* shall make use of the first *WMOT* available for the hour as reference for its re-dispatch instruction at any *dispatch interval* for that hour (e.g., 1005H WMOT shall be used for all *dispatch intervals* from 1005H to 1100H).

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11.3 Responsibilities

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11.3.1 The *System Operator*, in coordination with the *Market Operator*, shall be responsible for the following:

a. Monitoring the implementation of *dispatch* targets as determined by the *Market Operator* at the end of each *dispatch interval;*
b. Directly issuing *dispatch instructions* to *generating units* operating on *AGC;*
c. Implementing the *WMOT* provided by the *Market Operator;*
d. Assuring the *security* and reliability of the *grid* at all times in compliance with the provisions of relevant guidelines on System security and reliability and the *Grid Code*;
e. Dispatching *generators* as *constrain-on* or *constrain-off*, or as *must-run unit* if all available *reserves* are exhausted during a *dispatch interval;* and
f. Reporting events and actions made during *dispatch intervals.*

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11.3.3 All *Trading Participants* shall comply with their respective *dispatch schedules* issued by the *Market Operator*, the *dispatch instructions* issued by the *System Operator* to their facilities operating on *AGC mode*, and the re-dispatch instructions issued to them by the *System Operator*, if any. For this purpose, they shall ensure that their respective internal processes, systems, and infrastructure, as well as their protocols with their counterparties, shall enable strict compliance with this Section.

11.4 Issuance and Coverage of Dispatch Instructions

11.4.1 Except for *generating units* operating on *AGC*, *dispatch instructions* shall include the following:

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11.4.2 For *generating units* operating on *AGC*, the following shall be observed:

a. The *System Operator* shall send *AGC* commands based on a linear ramp rate specified by the *Generation Company*.
b. The *Generation Company* shall communicate to the *System Operator* the status of the *AGC* operations from start, during, and end of *AGC* remote control mode, as necessary.
c. The *Generation Company* shall seek clearance from the *System Operator* to change from remote to local *AGC* mode in cases of technical constraints.
d. When the *Generation Company* observes *AGC*-related issues that affect its operations, the *Generation Company* shall immediately communicate such issues to the *System Operator* prior to changing its mode of dispatch.

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11.4.4 Generator Dispatch Compliance Beyond Normal Grid Frequency Threshold.

for: LGB

a. When the *grid frequency* reaches 59.7Hz or lower, the *Trading Participants* shall operate based on the following conditions:

Condition	Status of Actual Dispatch	Expected Response
Frequency is 59.7 Hz or lower	If ramping down, or current actual loading is higher than *dispatch schedule*	*Generating unit* should stop ramping down and maintain current actual loading unless otherwise instructed by the *System Operator*
	If ramping up, or current actual loading is lower than *dispatch schedule*	*Generating unit* should continue to ramp up to its *dispatch schedule* unless otherwise instructed by the *System Operator*

b. Once the *grid frequency* goes up to 60 Hz after coming off from a state in Section 11.4.4 (a), then the *Trading Participants* shall resume to dispatch its *generating units* to meet its *dispatch schedule*.

c. When the *grid frequency* reaches 60.3 Hz or higher, the *Trading Participants* shall operate based on the following conditions:

Condition	Status of Actual Dispatch	Expected Response
Frequency is 60.3 Hz or higher	If ramping down, or current actual loading is higher than *dispatch schedule*	*Generating unit* should continue to ramp down to its *dispatch schedule* unless otherwise instructed by the *System Operator*
	If ramping up, or current actual loading is lower than *dispatch schedule*	*Generator* should stop ramping up and maintain current actual loading unless otherwise instructed by the *System Operator*

d. Once the *grid frequency* comes down to 60 Hz after coming off from a state in Section 11.4.4 (c), then the *Trading Participants* shall resume to dispatch its generating units to meet its *dispatch schedule*.

11.5 Dispatch of Must and Priority Dispatch Generating Units

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11.5.2 If, in real-time, the available *generation* from a *Must dispatch generating unit* differs from the available *generation* assumed in the *dispatch schedule* provided to the *System Operator*, the *System Operator* shall allow the *Must dispatch generating unit* to generate at its *maximum available output*, and, if all available *regulating reserves* are exhausted during a *dispatch interval*, shall adjust the *dispatch* of other *generating units* to compensate as required in accordance with re-dispatch process in this Section.

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11.8 Communicating and Reporting of Dispatch Schedules and Instructions

11.8.1 The *real-time dispatch* targets shall be communicated by the *Market Operator* to the *Trading Participants* through the *MPI*. The *WMOT* generated for a *dispatch interval* shall be published in accordance with Section 10.7.2 of this Dispatch Protocol. *Dispatch instructions* through the *AGC* facilities shall be communicated by the *System Operator* through the available communication link with the power plant operator. Redispatch instructions shall be communicated by the *System Operator* to the *Trading Participants* through their respective power plant operators.

11.8.2 The *System Operator* shall maintain the communication facilities it needs for communicating with *Trading Participants* which may include telephones, fax, email, web pages, facilities for *AGC*, and other means of communications.

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11.8.4 All *dispatch instructions* issued by the *System Operator*, including those provided through the facilities for *AGC*, to *Trading Participants* shall be recorded through operator logs. The *System Operator* shall include this information in the dispatch deviation instruction report, in accordance with Section 14.4.

11.8.5 Dispatch instruction reports submitted by the System Operator to the Market Operator shall be used for purposes of surveillance, audit, and market settlements.

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13.2 Responsibilities

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13.2.2 Consistent with its obligations pertaining to *real-time dispatch* scheduling and implementation, the *System Operator* shall ensure:

a. Continuous and timely submission and updating of the *outage* schedules of *generating units* to the *Market Operator;*

for: LGP

b. Issue clearance to *Trading Participants* to carry out the *start-up* or *shutdown* of their *generating units*; and
c. Carry out the procedures set out in this Section.

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13.3 General Procedures

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13.3.4 The *dispatch scheduling* of the *generating unit* that will *start-up* or *shutdown* shall be managed through its *market offers* submitted within the *WESM timetable*. The *Trading Participant* shall submit *market offers* or *nominations* for the *dispatch interval* during which the unit is to *start-up* or *shutdown* and make adjustments to its *market offers* or *nominations*, as appropriate.

13.3.5 Consistent with the provisions in the *WESM Manual* on the Market Network Model Development and Maintenance - Criteria and Procedure, the status of *generating units* shall be based on their registered availability in the *market network model*.

13.4 Start-up of a Generating Unit

13.4.1 A *generating unit* must have *market offers* or *nominations* prior to the execution of the *real-time dispatch* run consistent with the *WESM timetable*.

13.4.2 The *System Operator* shall update the *outage* schedule of *generators* to remove the *generating unit* cleared to *start-up* from the *outage* list. Submission shall be in accordance with the WESM timetable.

13.4.3 If the start-up will be deferred, the *System Operator* shall update the *outage* schedule accordingly and in accordance with the *WESM timetable* for submission of *outage* schedules.

13.4.4 Once synchronized to the *grid* and scheduled for *dispatch*, the *generating unit* shall ramp-up linearly to its adjusted operating limit that was based on its *start-up* profile in the next *dispatch interval*.

13.4.5 The *Trading Participant* shall update its hourly *offers* for the *dispatch intervals* covered in the *start-up* sequence.

13.5 Shutdown of a Generating Unit

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13.5.3 The *Trading Participant* shall update its *market offers* or *nominations* for the *dispatch intervals* covered in the *shutdown* sequence.

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13.5.4 Once the *generating unit* has completely *shut down*, the relevant *Trading Participant* shall cancel its daily *market offer* or *nomination* profile for the affected *trading day*.

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14.1 Background

After each *dispatch interval*, the *System Operator* is required under *WESM Rules* Clause 3.8.2 to advise the *Market Operator* of the occurrence of, among other information, *dispatch* instructions, *load shedding*, network *constraints*, binding security constraints and operational irregularities.

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14.4 Post-dispatch Reports and Information

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14.4.2 Dispatch Instruction Report. On a weekly basis, the *System Operator* shall submit a report to the *Market Operator*, containing their *dispatch instructions* that includes, but are not limited to, *generator* re-dispatch (e.g., constrain-on generation, constrain-off generation, must-run generation), MW output schedule during *market intervention* or *market suspension*, and, as necessary, commands via the *automatic generation control*. The Dispatch *Instruction* Report shall contain, among others, the following information:

a. Date and Time of Incident
b. Resource name
c. Reason for Dispatch Instruction:
   - Utilized for *ancillary services*
   - Testing Requirement
   - Re-dispatch of *constrain-on* and *constrain-off generating units*
   - Designation of *must-run units*
   - Limitation on *must dispatch generating units*
   - *Market Intervention* or *Market Suspension*
d. Short description of the issue being addressed (e.g., frequency breached x Hz)
e. Type of *Dispatch Instruction*
f. Target MW value instructed

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14.4.5 Report on Must-run Units. In accordance with *WESM Rules* Clause 3.5.13.1, the *System Operator* shall submit information to the *Market Operator* identifying all the *generating units* designated as *must-run units* within the *trading day*, as well as information necessary for the proper settlement of such *generating units*. Such information shall be included in the Dispatch Instruction Report.

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14.4.7 Each *Generation Company* shall validate all the data in the Dispatch Instruction Report as published by the *Market Operator* in the *market information website*. Any discrepancy in these reports shall be reported by the *Generation Company* to the *Market Operator* within two (2) weeks after the *Market Operator*'s publication of these reports. Failure by the *Generation Company* to report to the *Market Operator* any discrepancy within the period defined herein shall render the data in the report as final.

14.4.8 Within two (2) *working days* from receipt of a report, the *Market Operator* shall request the *System Operator* to validate a reported discrepancy by a *generator*.

14.4.9 The *System Operator* shall perform reconciliation with the *Generation Company* and provide the results of its validation of the reported discrepancies within seven (7) working days from the receipt of the request from the *Market Operator*. If the *Market Operator* has not received any validation within the prescribed timeline, the published data from the Dispatch Instruction Report shall be maintained. If the *Generation Company* claims additional compensation related to the reported discrepancies that were not validated within the prescribed timeline, the *Generation Company* may subject the said claim under the WESM dispute resolution process.

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15.4 Determination of Reserve Requirements

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15.4.2 The level of *reserve* requirement for *regulating reserve* service shall be based on the latest issuances on the procurement of *ancillary services* by the *ERC* and shall be used as reference by the *Market Operator* for the *market projections* and *real-time dispatch schedule*.

15.4.3 For *contingency reserve* service and *dispatchable reserve*, the *System Operator* shall determine the level of *reserve* requirement in accordance with the latest issuances on the procurement of *ancillary services* by the *ERC*.

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18.3 Managing Excess Generation for the Next Day

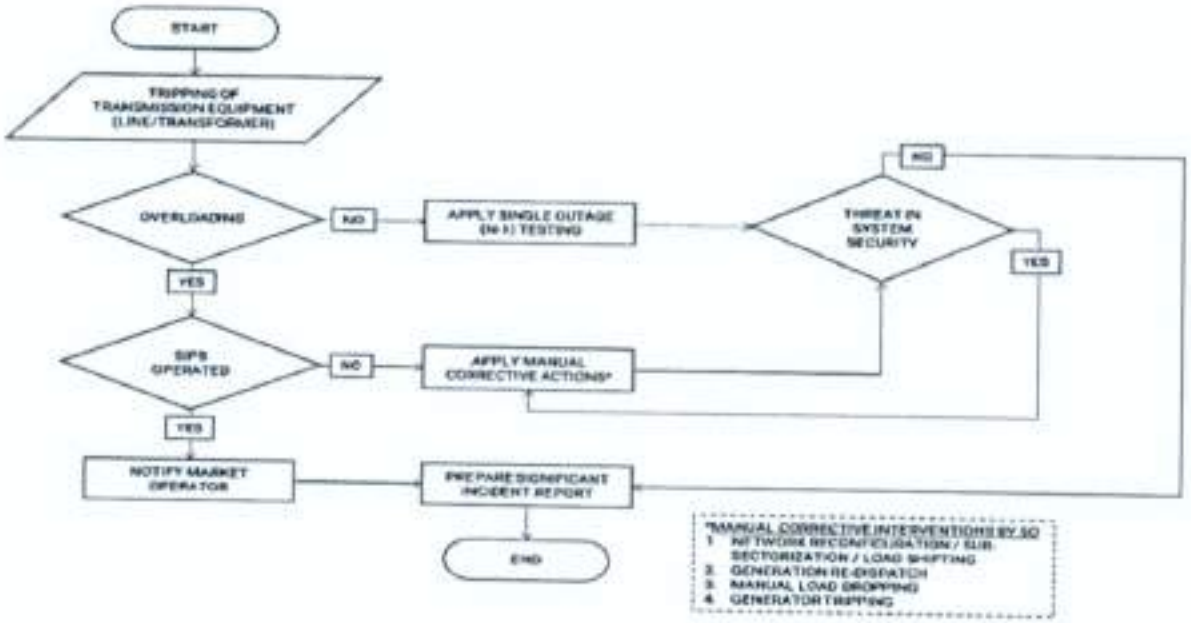
18.3.1 There is an impending *excess generation* when the resulting price in the *day-ahead projection* run is equivalent to the offer floor price and the aggregate unscheduled Technical Pmin of generating units with floor price offers is greater than or equal to the *regulating reserve* requirement.

for: MLG

XXX XXX XXX

20.4 Emergency Procedures

20.4.1. Emergency Procedures during Overload



XXX XXX XXX

Appendix D. Content Structure of *Real-time dispatch* Results for the *System Operator*

XXX XXX XXX

a. *Real-time dispatch schedules*	
Column Name	Description
END_TIME	End/Target Time of the Dispatch interval
REFERENCE_NAME	Concatenates the Resource Name and the market product. The following lists the market products available. • "EN" for energy • "RU" for Regulation raise/upward • "RD" for Regulation lower/downward • "FR" for Fast Contingency Raise *(Contingency Reserve)* • "DR" for Delayed Contingency Raise *(Dispatchable Reserve)* To illustrate, if a generator's resource name is 3GEN, hence, it will have a line item of 3GEN_EN to represent its Energy Schedule

a. *Real-time dispatch schedules*	
Column Name	Description
MW	MW schedule that is referenced to the End/Target Time

b. Market Requirements	
Column Name	Description
START_TIME	Start Time of the Dispatch interval
END_TIME	End/Target Time of the Dispatch interval
RUN_TYPE	Describes the type of market run, which is RTD
MKT_PRODUCT	Describes type of requirement • "EN" for energy • "RU" for Regulation raise/upward • "RD" for Regulation lower/downward • "FR" for Fast Contingency Raise *(Contingency Reserve)* • "FL" for Fast Contingency Lower • "SR" for Slow Contingency Raise • "SL" for Slow Contingency Lower • "DR" for Delayed Contingency Raise *(Dispatchable Reserve)*
REGION_ID	Region name with the specific market requirement
REQ_MW	MW schedule that is referenced to the End/Target Time

xxx xxx xxx

Appendix E. Content Structure of SO Inputs to the *Market projections* and *Real-time dispatch*

xxx xxx xxx

f. *Reserve* Requirement	
Column Name	Description
SCHEDULE_TYPE	Refers to the MMS' COP Schedule Type for Reserve Requirement. The following are the available schedule types for reserves. • Regulation Lower Reserve • Regulation Raise Reserve • Fast Contingency Raise Reserve *(Contingency Reserve)* • Delayed Contingency Raise Reserve *(Dispatchable Reserve)*
VERSION	*xxx*
OBJECT_ID	*xxx*
TARGET_TIME	*xxx*

f. *Reserve* Requirement	
Column Name	Description
MW	*xxx*

xxx xxx xxx

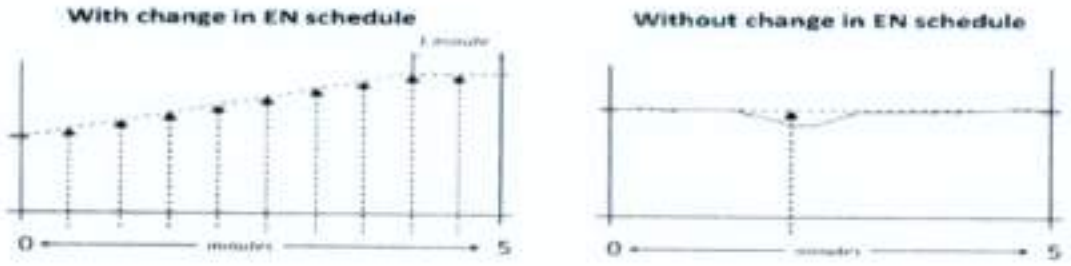
Appendix G. Details of Dispatch Instructions Using Automatic Generation Control

Enhanced AGC System Command Modes

No.	RTD Schedules	Command Mode	Remarks	Lower Limit	Upper Limit
1	Energy Only	SCHED – O	Energy only	None	
2	Contingency Reserve (CR) Only	AUTO – E	Scheduled for Contingency Reserve only	Pmin	Pmin + CR
3	Energy + Contingency Reserve	SCHED – E	Has energy and contingency reserve schedule	EN	EN + CR
4	Regulating Reserve (RR)	AUTO – R	Scheduled for regulating reserve only	EN – RR Downward	EN + RR Upward
5	Energy + Regulating Reserve	SCHED – R	It has energy and regulating reserve schedules. It also has same energy schedules in previous and current dispatch intervals.		
		AUTO – R	It has energy and regulating reserve schedules. It also has different energy schedules in previous and current dispatch intervals.		
6	Dispatchable Reserve (DR) Only	MANUAL	Scheduled for Dispatchable Reserve only	EN – DR Lower	EN + DR Raise
7	Energy + Dispatchable Reserve	SCHED-O	Has energy and dispatchable reserve schedule		

Illustrating AGC Commands Within the 5-minute Dispatch Interval

for: OLGB



Command Mode: **SCHED-O**

xxx xxx xxx

Section 3. Amendments to the Market Manual on Registration, Suspension and De-Registration Criteria and Procedures. The provisions of the Market Manual on Registration, Suspension and De-Registration Criteria and Procedures are hereby amended to as follows:

xxx xxx xxx

2.5 Registration of Direct WESM Members and Trading Participants

xxx xxx xxx

2.5.4 Other Considerations

xxx xxx xxx

2.5.4.7 Modelling of the Generating Unit's Availability

Upon registration, *Trading Participants* shall specify if the availability of its *generating unit* shall be based on the real-time status of its generator breaker, or on the availability of its *market offers*.

xxx xxx xxx

Section 4. Amendments to the Market Manual on Market Network Model Development and Maintenance - Criteria and Procedures. The following provisions of the Market Manual on Market Network Model Development and Maintenance - Criteria and Procedures are hereby amended to read as:

xxx xxx xxx

2.1 Definitions

xxx xxx xxx

for: [illegible]

2.1.5 *Market Resources* refers to the objects defined in the *Market Network Model* to represent generators, battery energy storage systems, pumped-storage units, and loads.

xxx xxx xxx

4.4 MNM Components and Modeling

xxx xxx xxx

4.4.12 Real-Time Data

The System Operator shall provide the following real-time data, each having its respective real-time data quality, to the *Market Operator:*

a. Analog measurements (MW/MVAR) to represent gross generation output and generation net of the station use;
b. Analog measurements (MW/MVAR) to represent consumption at least at the connection point;
c. Analog measurements (MW/MVAR) measuring loading at the high-side and low-side of the transformer;
d. Analog measurements (MW/MVAR) measuring the loading at both ends of an AC line or HVDC link;
e. Breaker Status;
f. Calculated MW Demand per region; and
g. Power System Frequency per grid (Hz).

4.5 MNM Development Table

xxx xxx xxx

4.5.4 After the receipt of the official notification from the *System Operator*, the *Market Operator* shall start the preparations for the MNM update to facilitate the implementation of the notified change. Minor changes (such as but not limited to change in equipment/resources naming conventions, additional bays for future expansions) to the transmission network that have no impact to the market operations may be implemented at a later time.

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4.5.6 The table below describes the timeline of activities involved in updating the MNM. The variable "D" stands for the target date of deployment of the MNM update. This date is set by the *Market Operator* upon its assessment and in consideration of the energization or commissioning date of a new or upgraded facility or equipment.

Table 1. MNM Development Timetable

for: LGB

ITEM	TIMELINE	ACTIVITY	DESCRIPTION	RESPONSIBLE PARTY
1	Before D – 9	*Generator Trading Participants* should provide technical specifications of its facility to the *Market Operator*	At the very least, the technical requirements indicated in the WESM Market Manual on Registration, Suspension and De-Registration Criteria and Procedures for new *generators*, *battery energy storage systems*, or *pumped-storage* units should be provided. The same requirements are also required when requesting for the re-modelling of facilities (i.e. aggregation of disaggregation of resources).	*Generator Trading Participant*
2	Before D – 9	The *System Operator* should provide technical specifications to the *Market Operator* for new *load* facilities	The *System Operator* should provide the breaker-oriented single line diagram that reflects the connection of the new *load* facility.	*System Operator*
3	Before D – 8	*Network Service Providers* should provide notice of changes in the *Distribution Network*	Applicable only for *Network Service Providers* whose equipment should be included, or are already included, in the *Market Network Model*	*Network Service Providers*
4	D – 8	Register New *Market Resource* in the Central Registration and Settlement System (CRSS)	Upon receiving the technical requirements for the registration of new *market resources*, the *Market Operator*	*Market Operator*

for: DLB

ITEM	TIMELINE	ACTIVITY	DESCRIPTION	RESPONSIBLE PARTY
		and Market Management System (MMS)	shall register it in the CRSS and MMS at least eight (8) days prior to their target energization.	
5	D – 7	Submit notice of changes to the *Grid*	The *System Operator* shall submit a notice of changes to the grid, which includes the following. • Breaker-oriented single line diagram that highlights the changes; • Real-time mapping definitions; and • Technical parameters affected by the change.	*System Operator*
6	D – 6	Initiate Preparations for MNM Update	The *Market Operator* shall make the necessary preparations concerning the MNM update, specifically for network changes that have a material effect to the system operations and market operations as appropriately assessed by the *Market Operator*. It shall involve the changes as notified by the *System Operator*, and changes recommended by the *Market Operator*, where appropriate, including	*Market Operator*

ITEM	TIMELINE	ACTIVITY	DESCRIPTION	RESPONSIBLE PARTY
			simplifications and alterations to the market network model that maintains: (a) the relationship between the market network model and the transmission network; and (b) consistency with market requirements.	
7	Before D – 2	Market Model and Power System Model Update	The *Market Operator* shall effect changes to the MNM through the updating of the market and power system models recognized by the MMS. The Market Operator may create different "MNM Update Tasks" for such MNM updates. An MNM update task represents a collection of changes in the MNM. Each MNM update task can be deployed separately for production use.	*Market Operator*
8	Before D – 2	Testing of "MNM Update Task"	The *Market Operator* shall perform functional and technical tests on the updated network model for each MNM task to ensure its consistency with the updated *power system*.	*Market Operator*
9	Before D – 1	Confirm schedule of energization	The *System Operator* shall inform the *Market Operator* of	*System Operator*

for: LGR

ITEM	TIMELINE	ACTIVITY	DESCRIPTION	RESPONSIBLE PARTY
			the final schedule of energization.	
10	On or Before D	Notice of Planned Deployment to the WESM Participants	The *Market Operator* shall inform the *WESM Participants* of the planned deployment date for the updating of the MNM in the production system of the MMS	*Market Operator*
11	D	Deployment of MNM Update Task	The *Market Operator* shall deploy the MNM Update Task in the production system. Should the MNM update task involve changes that are not yet energized, and the updated MNM's power system model is unable to dynamically adapt to its non-energization, then the *Market Operator* may defer the deployment of the MNM Update Task to a later date.	Market Operator
12	D	Notice of Post-Deployment to the WESM Participants	The *Market Operator* shall inform the *WESM Participants* of the successful deployment of MNM update in the production system of the MMS	Market Operator
13	D	Provide Updates on Market Model and Power System Model to the *System Operator*	The Market Operator shall provide the System Operator with relevant information to ensure reliable operation between the two entities. This primarily includes the	Market Operator

for: LCB

ITEM	TIMELINE	ACTIVITY	DESCRIPTION	RESPONSIBLE PARTY
			updated mapping information between the MMS and EMS	
14	D to D+7	Consistent monitoring of the updated MNM	The *Market Operator* shall continuously monitor the status of the recently updated MNM in the production system for the next seven days	Market Operator

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4.5.7 The *Market Operator* shall prepare a monthly report containing all MNM updates deployed in the production system. This report shall be provided to the *DOE*, *ERC*, and the *PEM Board*, and shall be similarly published in the *market information website* ten (10) *working days* after the end of the *billing period*.

The *Market Operator* shall seek the approval of the PEM Board prior to integration of the new network, as described in WESM Rules Clauses 3.2.1.2 and 3.2.1.5, to the MNM. The result of functional and technical testing for such integration shall also be submitted to the PEM Board. within three (3) calendar days after completion.

4.5.8 Additional Considerations in the MNM Development are as follows:

a. Network Service Providers shall ensure that they provide ample information regarding their planned activities to the System Operator.
b. All planned activities should involve proper coordination between the Market Operator and the System Operator (including affected Trading Participants if necessary).
c. The target date of deployment (Day 'D') by the Market Operator may be moved further depending on justifiable reasons from either the Market Operator or the System Operator. In such cases, the Market Operator in coordination with the System Operator should decide on the new target date of deployment.
d. Should the target deployment of an MNM update be cancelled, and then other updates to the MNM were put into effect after its cancellation, the System Operator shall notify the Market Operator of its new scheduled energization date seven days prior.
e. In cases where urgent updates to the MNM are necessary, the *Network Service Provider* or the *System Operator* shall provide the necessary technical requirements to update the MNM at least two (2) *working days* prior to the target energization. Urgent updates do not include new *market resources*.

for: RCD

xxx xxx xxx

5.1 Dynamism of MNM Using Real-Time Data

5.1.1 The static power system model of the MNM is constantly updated based on the inputs and data provided by the *System Operator*. This shall include, but may not be limited to, the following:

a. Change in Transmission and Sub-transmission Network topology with reference to real-time status of breakers and disconnect switches; and
b. Scheduled outages of power system equipment (e.g. Lines, Power Transformers, HVDC Links, *Generators*, and *Customer Loads* outage).

5.2 Development of Updates to the MNM

5.2.1 The *Market Operator* shall develop the *market network model* and *power system* model in view of any reconfiguration of any part of the transmission or sub-transmission system. This shall include the following:

xxx xxx xxx

5.4 Market Network Model Maintenance

xxx xxx xxx

5.4.2 The *Market Operator* shall maintain an electronic copy of the following for all *market network model* updates:

a. Bus Oriented Single Line Diagram;
b. Breaker Oriented Single Line Diagram; and
c. Technical Parameters

xxx xxx xxx

5.5 Reporting of MNM Updates

5.5.1 Within two (2) *working days* from deployment, the *Market Operator* shall publish advisory on the MNM updates deployed in the production system.

5.5.2 Consistent with the provisions of Clause 4.5.7 of this *Market Manual*, the *Market Operator* shall prepare a monthly report containing all MNM updates deployed in the production system. This report shall be provided to the *DOE*, *ERC*, and the *PEM Board*, and shall be similarly published in the *market information website* ten (10) *working days* after the end of the *billing period*. At the least, it shall contain the following:

a. Summary of MNM Updates during the month
b. Latest Bus-Oriented Single Line Diagram

xxx xxx xxx

for: LGB

6.5 Generator MTN

xxx xxx xxx

6.5.4 During the registration of the generator resource, *Trading Participants* shall specify if its availability shall be based on the real-time status of its generator breaker, or on the availability of its *market offers*.

xxx xxx xxx

6.7 Battery Energy Storage System MTN

xxx xxx xxx

6.7.4 During the registration of the *battery energy storage system resource*, *Trading Participants* shall specify if its availability shall be based on the real-time status of its connecting breaker, or on the availability of its *market offers*.

6.8 Pimped-Storage Unit MTN

xxx xxx xxx

6.8.4 During the registration of the *pumped-storage unit resource*, *Trading Participants* shall specify if its availability shall be based on the real-time status of its connecting breaker, or on the availability of its *market offers*.

xxx xxx xxx

Section 5. Amendments to the Market Manual on Market Operator Information Disclosure and Confidentiality. Appendix A of the Market Manual on Market Operator Information Disclosure and Confidentiality is hereby amended to read as:

xxx xxx xxx

Appendix A. Market Information Catalogue

Market Information			Information Access			
Category	Specific Information	Information/ Data Source	Classification	Recipient	Means of Provision	Publication Timeline
xxx						
OTHERS						
Transmission System Information	*xxx* Dispatch Instruction Report by the System Operator (in CSV)	*xxx* System Operator	*xxx* Public	*xxx* Public	*xxx* Market Information Website	*xxx* Weekly report to be submitted within the

						following week
	Revisions to the Dispatch Instruction Report by the System Operator (in CSV)	System Operator	Public	Public	Market Information Website	Within five (5) *working days* upon receipt from the System Operator

xxx xxx xxx

Section 6. Separability Clause. If for any reason, any section or provision of this Circular is declared unconstitutional or invalid, such parts not affected shall remain valid and subsisting.

Section 7. Repealing Clause. Except insofar as may be manifestly inconsistent herewith, nothing in this Circular shall be construed as to repeal any mechanisms already existing or responsibilities already provided for under existing rules.

Section 8. Effectivity. This Circular shall take effect after fifteen (15) days following its complete publication in at least two (2) newspapers of general circulation and shall remain in effect until otherwise revoked.

Copies hereof shall be filed with the University of the Philippines Law Center – Office of the National Administrative Register (UPLC-ONAR)

Issued this _____ 2022 at the DOE, Energy Center, Rizal Drive, Bonifacio Global City, Taguig City, Metro Manila.

ALFONSO G. CUSI
Secretary

JUN 20 2022

Republic of the Philippines
DEPARTMENT OF ENERGY

DOE-AGC-22003345