

Market Readiness Assessment for the Implementation of the Enhanced WESM Design and Operations

Stakeholder Follow-up Meetings

8 May 2019



Contents

1. Recap on our role
2. Remaining timeline for Parallel Operations
3. Stakeholder Participation Update

Our Role

We will be:

- conducting the assessment of the readiness of the systems, awareness, manpower, and processes of the IEMOP, SO, PEMC, MSPs, and Market Participants
- supervising the conduct of parallel operations by the IEMOP
- providing recommendations to ensure the effective transition and implementation of the enhanced WESM design and operations.

Separate market readiness assessments shall be made for:

- Luzon and Visayas
- Mindanao

Readiness Assessment Criteria

- Separate criteria for each group (e.g. PEMC, IEMOP, SO, Market Participants, MSPs)
- Provided to all participants late March
- Discussed during workshops early April
- Additional written feedback received
- Criteria refined following workshops and feedback

Key steps remaining in our work program

Steps	Date
Oversight of parallel operations	26 April – 25 May: main site 26 May – 25 June: back-up site (fail-over) 26 June – 25 July: subject to results of the previous 2 months. Decision likely before the end of May
More in-depth engagement	During first month of Parallel Operations (see next slide)
Electronic Weekly Status Reports to PEMC	Weekly during Parallel Operations
Draft market assessment reports	End of June
Final for Luzon and Visayas	25 July
Final for Mindanao	25 August

Indicative Project Timetable

Name	April			May					June				July				
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
	8/4	15/4	22/4	29/4	6/5	13/5	20/5	27/5	3/6	10/6	17/6	24/6	1/7	8/7	15/7	25/7	25/8
Activity	Work shops					Mindanao assessment											
		Initial report		Parallel operation - main site				Parallel operation - back-up site				Parallel operation (TBC)				Draft reports	Final reports
Stephen Black																	
Dave Carlson																	
Kieran Murray																	
David Reeve																	
Toby Stevenson																	

 on-site scheduling subject to issue observations (we will match experts to situation as required)

Length of parallel run subject to observations (report timing will adjust accordingly)

Parallel operations (bid to bill)

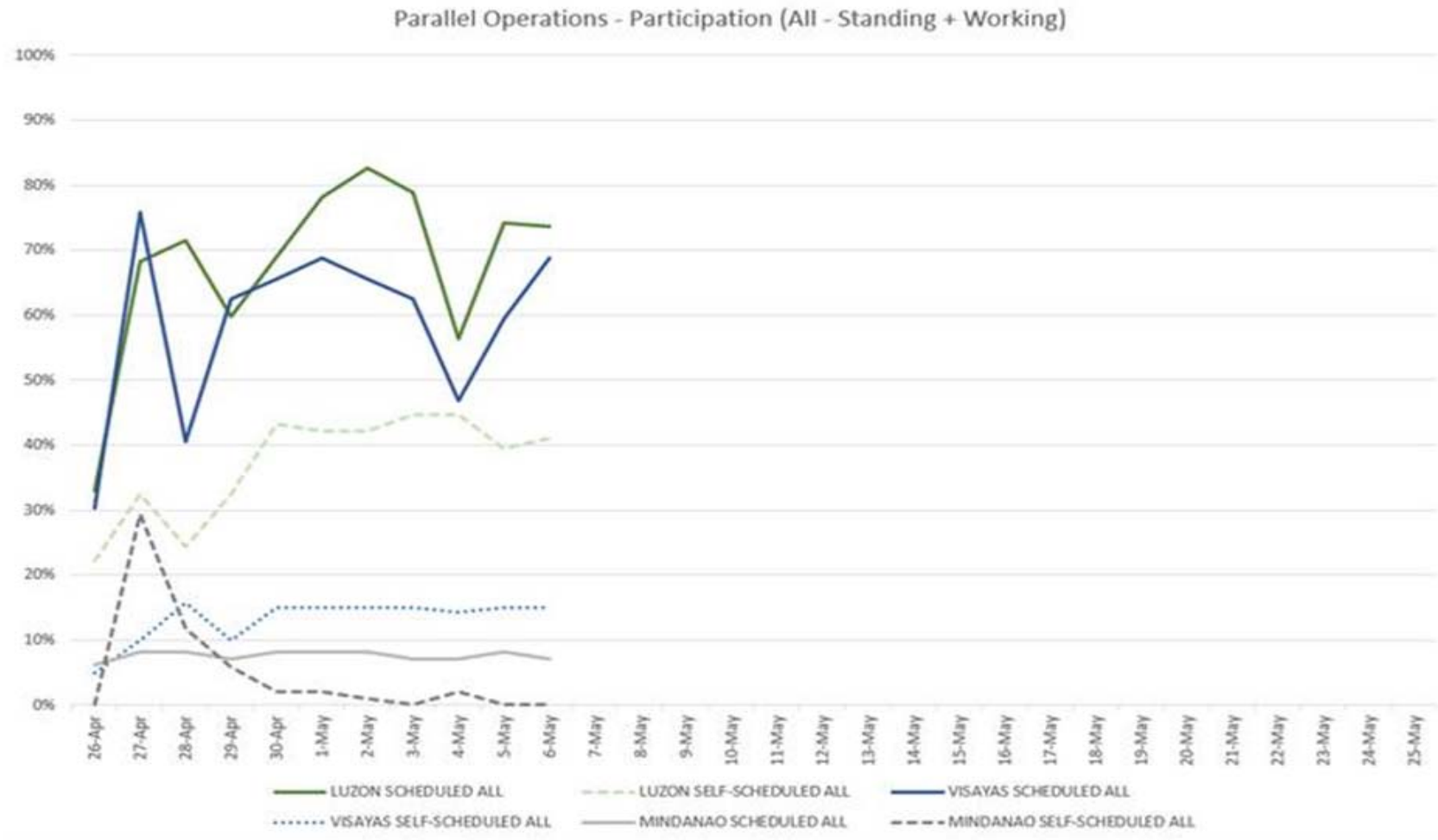
Generators are asked to input the same bids as they enter into the current system into the NMMS.

Dispatch instructions from the new NMMS are sent:

- to generators (where they can assess how they could have complied with 5 minute dispatch instructions);
- to the SO (where they can apply their real-time security tools to assess how comfortable they would have been had these instructions been used for dispatch) and
- as inputs to the CRSS system (where participants can upload BCQ quantities and observe the settlement statements that would have resulted).

Opportunity to test and refine your processes and systems and help improve market system and interface readiness with your feedback

Your participation is key



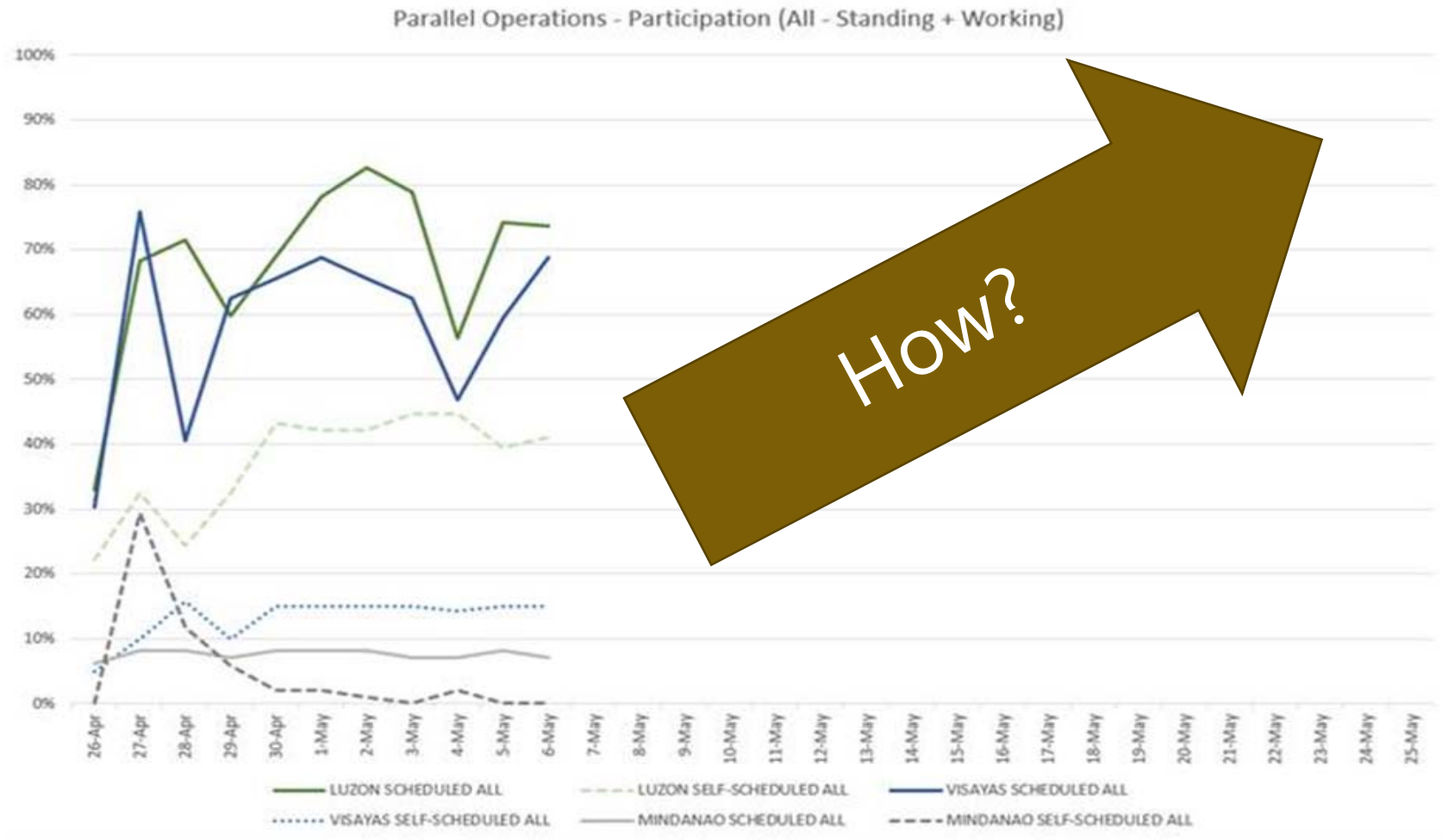
Further follow up with participants

- Meetings with system operators start later this week
- Meetings with MSPs start later this week
- Meetings with Generator traders start next week
 - Looking for balanced sample, scheduled and non-scheduled, different fuel types
- Survey planned for later in month
 - Request your feedback from parallel operations thus far
 - Assess how market readiness has changed
 - Refine 2nd month of parallel operations as necessary

Before I open for questions.....

One question for you please.....

Your participation is key



Questions?



Project Contact:

Toby Stevenson

+64 2166 6822

tstevenson@thinkSapere.com

independence, integrity and objectivity

Additional slides

Key market changes (Luz/Vis)

Market Design / Operations	Current	Enhanced
a. Dispatch Interval	1 Hour	5 minutes
b. Consideration of Pmin	Priority dispatch	Submitted as offer
c. Pricing	Ex-ante & Ex-post	Ex-ante only
d. Market Re-runs	Manual Market re-runs	Automatic pricing re-runs
e. Market Projections	Day-ahead projections (DAP) every four (4) hours	<ul style="list-style-type: none"> DAP every one (1) hour with sensitivities Hour-ahead projections (HAP) every five (5) minutes
f. Compliance monitoring	Manual dispatch conformance monitoring	Automatic dispatch conformance monitoring for energy
g. Scheduling/ Trading of Energy and Reserves	Results of central scheduling of reserves are input to energy-only market	Co-optimized energy and reserves
h. Settlements	<ul style="list-style-type: none"> One Hour interval and resolution Two-Part Settlement 	<ul style="list-style-type: none"> One Hour interval and 5-minute resolution One-Part Settlement
i. Administered Prices	Calculated during settlement	Calculated by NMMS
j. PSM Settlement	Adjustments made during settlement	PSM prices by NMMS is binding
k. MRU Settlement	GPI plus additional compensation	Market price plus additional compensation

Key market changes (Mindanao)

Feature	Current (Interim Mindanao Dispatch Protocol)	WESM
Scheduling		
- Contracted	As nominated	Based on price offers
- Uncontracted	None	Based on price offers
Re-dispatch	<ul style="list-style-type: none"> • A/S Dispatch • Based on re-nominations 	<ul style="list-style-type: none"> • A/S Dispatch • Based on Merit Order Table
Pricing	Contract price only	<ul style="list-style-type: none"> • Contract price for Contracted Quantity • Spot price for spot quantity
Contract Declaration to Market Operator	Monthly (~10 days after end of billing period)	Daily with confirmation (1 day after trading day)
Settlement	Contracts only	<ul style="list-style-type: none"> • Contracts outside WESM • Settlement of Spot Transactions in WESM

Readiness assessment of the IEMOP

100% achievement of operational performance targets, such as:

- 99.90% system availability of a fully functional and responsive Market Participant Interface (MPI), Energy Market Database and Reporting Platform (EMDRP) and CRSS
- 99.50% availability of a fully functional and responsive IEMOP website
- 95% timeliness of publications in the MMS Market Participant Interface (MPI) and IEMOP website, as follows, among others:
 1. real-time dispatch (RTD)
 2. hour-ahead projection (HAP)
 3. day-ahead projection (DAP) with sensitivities
 4. week-ahead projection (WAP) |
 5. final prices, or output of Dispatch Interval Pricing Calculation (DIPC)
 6. offers (IEMOP website only)
- RTD mean absolute percentage error (MAPE)
 7. Luzon: 0.95%
 8. Visayas: 1.20%
 9. Mindanao: 1.20%

Readiness assessment of the IEMOP

- RTD forecast accuracy rating (FAR)
 - 10. Luzon: 97.20%
 - 11. Visayas: 93%
 - 12. Mindanao: 93%
- DAP MAPE
 - 13. Luzon: 1.60%
 - 14. Visayas: 2.20%
 - 15. Mindanao: 2.20%
- 99.75% RTD workflow successful run
- 99.75% Post-market run calculation successful run
- 98% timeliness of settlement statements

Readiness assessment of the IEMOP

b. IT performance parameters:

- Successful conduct of switch-over from main site to back-up site and vice-versa, without major or critical issues and within agreed timeframes. This includes the NMMS, CRSS, and electricity market database and reporting platform (EMDRP)

c. Monitoring of market dispatch optimization model (MDOM)

- Review and sanity check instances of significant price differences between the existing ABB MMS and the Siemens NMMS. Each day, the Trading Interval (end-of-hour) with the largest average nodal price difference will be chosen for detailed investigation and analysis
- Review and sanity check constraint violation incidents, detailing the differences between the ABB MMS and the Siemens NMMS (end-of-hour)
- Review and sanity difference between MW losses estimated in the NMMS linear optimisation model (SCUC) and the MW losses calculated from the NMMS' power flow application.

Readiness assessment of the IEMOP

Criteria	
1.	NMMS and CRSS have been fully certified to be compliant to Market Rules by independent third-party auditors
2.	Network links and data interfaces between MO and SO infrastructure for the main and back-up sites have been fully established, tested and are reliable
3.	Data provision from the MO main and backup facilities to PEMC, DOE, SO, Market Participants, and ERC and receipt of data from these parties (where appropriate) have been fully established and tested
4.	Agreements with service providers (including internal IT providers) are in place with appropriate service management processes and service levels that ensure stable and uninterrupted market operations. Processes are in place to select robust providers, manage service provider relationships, monitor service levels and conducting regular reviews
5.	Business processes to implement obligations for the enhanced WESM design and operations under the Market Rules and Manuals and contingency plans have been documented and approved. Processes are robust, are understood, are being followed and a mechanism for review and updating is present.
6.	Disaster Recovery and Business Continuity plans are in place, are suitably robust, have been tested, with results documented
7.	All key operations staff are in place, are aware of new business processes and procedures.
8.	An appropriate culture for rule compliance is present.
9.	Key person risk has been identified and is being managed, Appropriate training and succession planning is in place.

Readiness assessment of the SO

Criteria	
1.	Data provision from the SO main and backup facilities to IEMOP and receipt of data from IEMOP have been fully established and tested (to the extent practical ²)
a)	Supervisory Control and Data Acquisition (SCADA) data completeness and quality are within acceptable levels
b)	Capability and processes to update off-line data (e.g. security limits, outage, contingency list) to the NMMS is in place
i)	Business processes in place to consider co-optimised reserve and energy with sufficient speed to respond to 5-minute dispatch and emergencies in the setting of security limits
ii)	Security review of the Mindanao power system to assess contingencies and security limits for the start of new WESM rules
2.	Receipt and processing of market results data (i.e. WAP, DAP, HAP, RTD, MOT files).
3.	Agreements with service providers (including internal IT service providers) are in place with appropriate service management processes and service levels that ensure stable and uninterrupted system operations. Processes are in place to select robust providers, manage service provider relationships, monitor service levels and conducting regular reviews
4.	Data provision from the SO main and backup facilities to IEMOP have been fully established and tested (to the extent practical)
5.	Business processes to implement obligations for the enhanced WESM design and operations under the Market Rules and Manuals have been documented and approved

Readiness Assessment of PEMC

Criteria
1. Agreements with service providers (including internal IT service providers) are in place with appropriate service management processes and service levels that ensure stable and uninterrupted operations
2. Attendance to trainings on the enhanced WESM design and operations, including the revised Market Rules and Manuals
3. Service levels agreements for IT systems are in place for market monitoring, assessment, and compliance monitoring of 5-minute dispatch interval and are met
4. Network links and data interfaces between IEMOP and PEMC infrastructure for the main and back-up sites of the electricity market database (EMDB) have been fully established, tested, and are reliable
5. Market rules and manuals for the enhanced WESM design and operations are approved by the DOE and ERC, as applicable
6. Business processes to implement obligations for the enhanced WESM design and operations under the Market Rules and Manuals have been documented and approved
7. Participants have been provided training on new market rule obligations
8. Market assessment procedures and tools have been updated accordingly. Plans to manage additional case load are in place (we would recommend that an initial shift in focus towards participant education be applied while participants become accustomed to new rule compliance obligations)

Readiness Assessment of Market Participants

Criteria
1. Agreements with service providers (including internal IT service providers) are in place with appropriate service management processes and service levels that ensure stable and uninterrupted operations
2. Attendance to training on the enhanced WESM design and operations, including the revised Market Rules and Manuals
3. Complete registration in the WESM with updated software certificates and access to the NMMS MPI and CRSS in place, with credentials and connections tested
4. Submission of standing and working offers for energy and ancillary services in the NMMS, as applicable
5. Timely submission of standing and working bids for energy and ancillary services (and updates in real time) in the NMMS, as applicable
6. Submission of standing and working demand bids for energy and ancillary services in the NMMS, as applicable
7. Systems and procedures are in place to ensure timely receipt of 5-minute dispatch targets and advice of receipt of instructions
8. Timely and regular submission of bilateral contract quantities and other settlement-related inputs in the CRSS
9. Duly designated WESM Compliance Officer (WCO)
10. Communications interface with SO, MO and own internal financial system databases (as required) in place, enhanced and tested.
11. Up to date and fit for purpose analytics (related to the extent each organisation needs analytic capability to manage its portfolio and its risk).
12. Internal documentation and training to understand new capabilities and new requirements. (Not limited to traders; includes other internal functions who will need to understand the implications of the changes.)
13. Documentation and authorities in place (as applicable).
14. Confirmation that (new) rule obligations are understood by internal parties responsible for compliance with the new rules.

Readiness Assessment of MSPs

Criteria
1. Agreements with service providers (including internal IT service providers) are in place and appropriate service management processes and service levels are established to ensure stable and uninterrupted operations
2. Attendance to training on the enhanced WESM design and operations, including the revised Market Rules and Manuals
3. Complete registration in the WESM with updated software certificates and access to the CRSS in place, with credentials and connections tested
4. Timely and regular submission of metering-related information in the CRSS successfully tested
5. Existing meters have been reprogrammed from 15-minute to 5-minute interval configuration or compliance programs are in place for those with meters that are still for reprogramming
6. Business processes in place to manage the transition from 15-minute to 5-minute data for retrieval and transmission to the MO for meters yet to be reprogrammed.