

**MINUTES OF THE RULES CHANGE PANEL
133rd MEETING
HELD ON THURSDAY, 23 MARCH 2023 AT 10.00AM
AT ENERGY MARKET CO. PTE LTD
4 SHENTON WAY #03-01
SGX CENTRE 2, SINGAPORE 068807**

Present:	Toh Seong Wah (Chairman) Henry Gan Teo Chin Hau Calvin Quek Matthijs Jan Guichelaar Fong Yeng Keong Song Jian En	Soh Yap Choon Cheong Zhen Siong Tony Tan Dr Toh Mun Heng Sean Chan
Absent with Apologies:	Rachel Su Huifen Tan Chian Khong	Sherman Toh
In Attendance: (EMC)	Poa Tiong Siaw Vincent Wise Fernanda Tham	Wang Jing Lim Chern Yuen

Minutes of 133rd RCP Meeting – 23 March 2023

Action

1. Notice of Meeting

The Chairman called the meeting to order at 10.00am. The Notice and Agenda of the meeting were taken as read.

2. Confirmation of Minutes of the 132nd Rules Change Panel Meeting

The Minutes of the 132nd Rules Change Panel (“RCP”) meeting, held on 19 January 2023, were approved by the RCP.

3. Update of Monitoring List, Rule Change Submission, and RCP Workplan

3.1. Ms Wang Jing presented the Update of Monitoring List, Rule Change Submission, and RCP Workplan for period from December 2022 to January 2023.

3.2. The RCP noted the updates from EMC.

4. Appointment of Technical Working Group Members

4.1. Ms Fernanda Tham presented details on the Appointment of the Technical Working Group (TWG), covering term of appointment, member profiles and composition.

4.2. Ms Tham informed that 3 members have resigned from the TWG, namely Ms Du Ying from Seraya Energy Pte Ltd, Ms Lim Xinyi from

Tuas Power Generation Pte Ltd, and Ms Cherie Chen from Energy Market Company Pte Ltd (EMC).

- 4.3. With the resignations, the MCE expert shall be nominated by EMC and the Market Participant Representatives shall be nominated by MPs who are not the nominating organisation of any current TWG member. The term of the appointment shall be from 27 March 2023 to 31 December 2023.
- 4.4. Ms Tham presented the nominations EMC received. Ms Tham then presented EMC's recommended TWG nominations, namely Ms Chen Liqin as the Market Clearing Engine (MCE) Expert (nominated by EMC), with Ms Xu Ruilin (nominated by YTL PowerSeraya) and Ms Priscilla Chua (nominated by Tuas Power Generation) as the Market Participant Representatives.
- 4.5. Mr Fong Yeng Keong noted that one of the nominees, Mr Saju John is from Shell Eastern Petroleum and asked if there were considerations to have nominees from the oil and gas industry, given that a majority of TWG members are from power generation companies.
- 4.6. Mr Poa Tiong Siaw responded that EMC considered Mr Saju John as extremely qualified in the oil and gas domain. Nevertheless, the TWG focuses on the electricity market's market clearing algorithm, overseeing MCE changes that involve detailed and technical rules. The preference is therefore for nominees with direct experience with the MCE.
- 4.7. Mr Fong clarified if the basic criteria were mentioned in the nomination. Mr Poa replied that the purpose, duties, and functions of the members are clearly detailed in the call for nominations.
- 4.8. Chairman noted that a good point was made about having different perspectives on the TWG and asked if there is a limit to the number of members in the TWG.
- 4.9. Mr Poa responded that the TWG is a group appointed by the RCP, governed only by an informal framework on the number of members, relevant skillsets, and required experience.
- 4.10. Further to Mr Poa's response, Mr Tony Tan asked if it is possible to onboard Mr Saju John. Mr Soh Yap Choon added that the representation and combination of the various stakeholders and licensees would also provide more independent views.
- 4.11. Chairman mentioned that with different technologies like solar and batteries in the market, expanding the TWG to bring in expertise in emerging technologies could be considered.
- 4.12. Mr Poa commented that it would be good to update the selection criteria for future appointments.
- 4.13. Chairman explained that the TWG exists to provide technical assessment to support the RCP with technical rule changes, and it should be noted in the next appointment of TWG to consider

incorporating skillsets from other relevant areas such as solar power and batteries.

- 4.14. The RCP unanimously approved the appointment of the 3 nominees.

5. Rules Change Work Plan 2023

- 5.1. Ms Fernanda Tham presented the Rules Change Work Plan 2023, taking stock of progress made in the previous work plan, presenting the list of existing and new issues raised during this year's work plan consultation exercise, and stakeholders' rankings.

- 5.2. Ms Tham highlighted the following recommendations by EMC that the RCP:

- Discuss and agree on a list of 10 issues to be addressed within 12 months in the updated work plan
- Decide on issues to be removed, if any
- Task EMC to monitor the progress of the agreed work plan

- 5.3. Mr Sean Chan highlighted the possibility of the dispatch interval being shortened from 30 minutes to 5 minutes, which may impact a few rule changes.

- 5.4. Mr Poa added that the shortening of the dispatch interval requires extensive rule changes but pointed out that this matter has not been ranked highly by the industry in the prioritisation exercise. Mr Poa shared the need for EMC to work closely with the PSO when work on this starts. Mr Soh Yap Choon added that work on this will be a separate workstream.

- 5.5. Mr Soh Yap Choon noticed that some of the proposed changes are overlapping or interrelated, such as item 8 and item 10 which are related to gate closure and suggested to consolidate them.

- 5.6. Mr Poa replied that when starting work on the issues, EMC will consolidate them when they make sense. EMC is conscious that consolidating multiple issues into 1 item can create multiple decision (voting) points that encumbers the process. There is a trade-off that EMC takes note of. EMC endeavours to consolidate related issues whenever logical and practicable.

- 5.7. Mr Soh commented that though the work plan focused on the top 10 issues for the year, it would be good to also look out for potential synergy (pertaining to audit and cyber security compliance) with other issues outside the top 10, which can be tackled together.

- 5.8. Mr Sean Chan added that work on related issues can be started at the same time, and then dealt with separately if they turn out to be unrelated. Mr Poa proposed to keep to the issues as presented and will consult the panel when there are related issues that can be worked on together.

- 5.9. Mr Cheong Zhen Siong asked if there could be relevant and valuable issues to be considered out of the top 10 issues, such as items 10 to 15. Mr Matthijs Jan Guichelaar added that it might be

good to assign a weight factor to straight forward issues that can be tackled quickly, even if they are ranked lower.

5.10. Mr Poa replied that it would be premature to apply any weight factor on the many issues that EMC has not yet been able to study in sufficient depth. He added that EMC would consolidate items whenever it made sense to save on time and resources.

5.11. The RCP unanimously approved (i) the list of 10 issues to be addressed in the next 12 months in the updated work plan and (ii) removal of the 3 issues identified with significant votes as proposed by EMC.

6. **Modelling of Energy Storage Systems (ESS)**

6.1. Mr Lim Chern Yuen presented the proposal on the modelling of energy storage systems (ESS), covering the analysis, rule modifications required, implementation effort estimate, and other details for discussion.

6.2. Mr Matthijs Jan Guichelaar asked about ESS registered as a load registered facility (LRF) and whether there are any requirements imposed on ESS based on its nameplate rating.

6.3. Ms Wang Jing clarified that ESS (as with other generators) with nameplate rating between 1 and 10 MW can choose to be registered as a Generation Registered Facility (GRF) or as a generation settlement facility (GSF). However, facilities with nameplate rating above 10 MW are required to register as a GRF and be subject to dispatch. This proposal will not change the existing arrangement.

6.4. Dr Toh Mun Heng asked if there is any asymmetry in the treatment of LRFs providing Demand Response (DR) and ESS charging from the grid. Ms Wang explained that this proposal views system forecast load and ESS charging differently. She explained that unlike system load that looks at total electricity demand being distributed across substations, ESS charging is a localised event at a particular node. Secondly, while system load is forecasted by the PSO based on historical patterns, ESS charging is largely at the discretion of the ESS' operator.

6.5. Mr Guichelaar asked if it would be possible to consider ESS participating in the DR programme if they are able to help the system by delaying their charging from the grid. Ms Wang Jing asked if the Panel seeks to explore this possibility.

6.6. Mr Tony Tan responded that such modelling would be complicated as the dispatch and payment to DR is quite different from the GRFs.

6.7. Mr Calvin Quek added that DR providers benefit from high prices by curtailing their load, while ESS can also similarly gain from high prices by discharging instead.

- 6.8. Further to Mr Quek's comments, Mr Teo added that BESS should not be allowed to participate in both the supply and demand side concurrently. The consideration would be more on whether the model can incentivise discharging when prices are high.
- 6.9. Mr Song Jian En further added that allowing ESS to participate in both the demand and supply side could result in conceptual misalignments.
- 6.10. Mr Teo opined that DR participants have a Business as Usual (BAU) load level that is used as a reference point when they are dispatched to curtail load. ESS would not have this BAU load level to reference against.
- 6.11. Mr Cheong Zhen Siong asked if ESS are only allowed to charge when they are dispatched to do so. Mr Lim Chern Yuen replied that this is correct. Mr Soh Yap Choon added that this is part of the compliance requirements for BESS where they need to comply with dispatch schedules.
- 6.12. Mr Cheong Zhen Siong also asked if it is possible that there is 200 MW that is cleared for charging for 1 period and 200 MW is cleared for discharging for period 2. Mr Lim replied that it is possible, subject to the ESS' ramp rate.
- 6.13. Mr Cheong Zhen Siong asked if the MCE will account for the BESS' offers to charge, to which Mr Poa replied that it will be, should the offers be valid.
- 6.14. Mr Lim Chern Yuen proceeded with the presentation covering issues identified for Reserve Proportion by ESS.
- 6.15. Mr Teo Chin Hau asked how is the ESS able to provide 10MW of reserve when the energy scheduled is 0MW. Mr Lim replied that this is by the ESS rapidly discharging 10MW from an idle state. Mr Teo clarified that this is only possible if the battery has sufficient State of Charge (SoC). Mr Lim replied that EMC's approach is informed by the NEMS being a self-commitment market – if the ESS has offered to provide reserve, EMC assumes it is able to provide said reserve when called upon. Mr Tony Tan asked if State of Charge is to be modelled. Mr Lim replied that it is not modelled for now.
- 6.16. Mr Tony Tan asked if there would be penalties for non-compliance for ESS. Mr Lim pointed to the existing penalty mechanisms. For energy under/over-delivery, there is the Automatic Financial Penalty Scheme (AFPS). For failure to provide reserve, generators are not paid for scheduled reserves, and also face a downgrading of their reserve provider group, resulting in said ESS getting paid less when they get scheduled for reserves in the future.
- 6.17. Mr Song Jian En clarified if the MCE will account for the lack of reserve provision if ESS fails when called upon. Mr Poa noted the potential benefit of modelling ESS SoC to alleviate this.

- 6.18. Mr Teo also noted that without modelling SoC, the ESS operator would also face difficulties in making offers reflective of the ESS' capabilities within gate closure. Mr Teo opined that SoC needs to be modelled to facilitate ESS contributing to the system.
- 6.19. Chairman noted the concerns on the modelling of SoC and referred to Mr Soh for comments. Mr Soh pointed to the self-commitment design putting the onus on the asset operators to offer accurately. Mr Soh added that the state of charge is something ESS operators and PSO monitor. If the BESS is unable to deliver its scheduled quantity due to SoC, non-compliance can be addressed by the existing penalty framework and enforcement by the MSCP.
- 6.20. Mr Poa asked Mr Soh if PSO has visibility on SoC of batteries; Mr Soh replied in the affirmative.
- 6.21. Mr Guichelaar opined that commercial decisions would decide the capacity of ESS installed and subsequent offer behaviour. Mr Teo responded that the issue is the uncertainty when submitting offers, to which Mr Tony Tan added that a prudent ESS operator may need to repeatedly breach gate closure to ensure compliance with dispatch.
- 6.22. Mr Guichelaar suggested that the responsibility lies on the ESS operators to ensure the offers reflect the ESS' real-time capabilities.
- 6.23. Mr Calvin Quek agrees with Mr Guichelaar that traders are responsible for accurate offer submission, but there is merit in automating the rejection of invalid offers (e.g., due to SoC), instead of relying on MP's constantly modifying offer submissions.
- 6.24. Mr Teo enquired about the possibility of modelling SoC (e.g., whether there is an issue of data provision from PSO to EMC)
- 6.25. Mr Soh replied that the data exchange process between PSO and EMC relating to SoC will have to be looked into.
- 6.26. Chairman suggested that the modelling of SoC be kept as an option. He also suggested to task the TWG to study the costs, the timeline, and any related issues and to update the Panel on their findings for the Panel's final decision. EMC
- 6.27. Mr Poa highlighted the need to arrive at a clear problem statement on the scope of the TWG's tasks. Ms Wang Jing presented the following problem statement for the TWG as follows: EMC
1. To examine the feasibility of modelling ESS SoC, the impact of doing so on the implementation timeline, and the system changes required.
 2. To examine the feasibility of alternative solutions (e.g., allow gate closure breach for ESS operators) to maintain self-commitment and allow for accurate MCE modelling.

The RCP agrees with the problem statement proposed by Ms Wang.

- 6.28. Mr Lim highlighted a proposal received from EMC Markets and Operations to implement a MCE-related proposal: to improve the robustness of the handling of StartGeneration used in the various dispatch and price schedules alongside the ESS modelling changes. Mr Henry Gan added that doing both changes concurrently would help save implementation cost and seeks the Panel's approval to do so. The RCP agreed with the approach proposed by EMC Markets and Operations.

EMC

There being no other matters, the meeting ended at 11.55am.

Toh Seong Wah
Chairman

Minutes taken by:
Ivy Leong
Legal, Compliance & Corporate Secretarial Executive