MINUTES OF THE RULES CHANGE PANEL
120TH MEETING
HELD ON WEDNESDAY, 27 JANUARY 2021 AT 10.00AM
VIA VIDEO-CONFERENCING

Present
Toh Seong Wah (Chairman) Henry Gan
Soh Yap Choon Tony Tan
Calvin Quek Carol Tan
Sean Chan Terence Ang
Song Jian En Cheong Zhen Siong
Ho Yin Shan Dr Toh Mun Heng
Fong Yeng Keong Tan Chian Khong

Absent with Teo Chin Hau
Apologies:

In Attendance: Poa Tiong Siaw Wang Jing
(EMC) Li Zhenhui Qin Wei Xiao
Joash Seng Clarissa Ooi

1. **Notice of Meeting**

   The Chairman called the meeting to order at 10.10am. The Notice and Agenda of the meeting were taken as read.

2. **Confirmation of Minutes of the 119th RCP Meeting**

   The Minutes of the 119th RCP meeting, held on 10 November 2020, were noted and the RCP approved the Minutes.

3. **Monitoring List**

   The RCP noted the content of the Monitoring List.

4. **Summary of Outstanding Rule Changes**

   The RCP noted the summary of outstanding rule changes.

5. **Rules Change Work Plan Status Update**

   The RCP noted the update on the Rules Change Work Plan.
6. **Review of Dispute Resolution Procedures**  
(Paper No. EMC/RCP/120/2021/05)

Ms Clarissa Ooi presented the paper which reviewed the dispute resolution procedures (“DRP”) as required under Chapter 3, Section 3.15 of the Market Rules to ensure continued relevance.

6.1 It was noted that the review was conducted in consultation with the Dispute Resolution Counsellor (“DRC”) to ascertain the following:
- whether current procedures are fair and effective;
- whether any additional procedures are necessary; and
- any other matter that the EMC considers appropriate.

6.2 Ms Clarissa Ooi informed the RCP that there were only two notices of arbitration filed with the DRC since 2011. Both disputes were subsequently resolved amicably between the parties to the disputes and the notices were accordingly withdrawn. EMC has published a notice on the review of the DRP and no proposal was received from the industry. The DRC was consulted and did not recommend any change to the existing dispute resolution procedures.

6.3 Given that no proposal was received from the DRC and the industry, EMC recommends that there be no change to the existing dispute resolution procedures and that the current dispute resolution process to be reviewed upon resolution of the first market dispute via the current process.

6.4 Mr Tan Chian Khong asked for the rationale for reviewing the current DRP only after the first resolution of a market dispute. Mr Poa Tiong Siaw explained that there has been no dispute case to base any review upon. It would be more effective and efficient to conduct a review on the DRP when we have experienced the first resolution of a market dispute via the current DRP, instead of reviewing it every 3 years.

(Ms. Ho Yin Shan joined the meeting.)

6.5 The Panel **unanimously supported** EMC’s recommendations.

7. **Reserve Provision by Non-Spinning Generation Facilities**  
(Paper No. EMC/RCP/120/2021/CP86)

Mr Joash Seng presented the paper which discusses a proposal to enhance the modelling of primary and contingency reserve capabilities of generation registered facilities (“GRF”). He went on to present EMC’s analysis on the proposal.

7.1 Mr Joash Seng informed the RCP that the concept paper was published on 15 October 2020 for consultation. EMC has responded to comments received from Senoko, Sembcorp, PacificLight, Keppel, and the Power System Operator.
7.2 Mr Tony Tan said that the proposal deals with technical issues and requested for the Technical Working Group ("TWG") to deliberate on the concept paper further before putting it to vote by the RCP. Mr Joash Seng replied that EMC intends to engage the TWG on the modeling aspects of the proposal if the proposal is supported by RCP.

7.2.1 Mr Heny Gan said that all facilities have a certain level of stability when they run to a certain load or generation level. He would like to know if a non-spinning GRFs which is below the minimum stable load or low load level, is stable enough to provide contingency reserve, when synchronized to the grid. He would also like to find out about the economics and efficiency of such unit and whether if it is worthwhile to remodel the reserve if it is applicable only to small group of facilities. It is important to remodel reserve to ensure that such units is really capable to provide the required reserve. As such, Mr Gan supports Mr Tony Tan’s suggestion to have the TWG deliberate on the feasibility of this proposal before putting it to a vote by the RCP.

7.2.2 Mr Terence Ang also agreed with Mr Tony Tan and Mr Henry Gan’s suggestion to have TWG deliberate on the proposal. Mr Ang said that the proposed rules change should be something that is feasible and that is not targeting at certain particular type of units in the system today but a more generalized application.

7.3 Mr Calvin Quek said that when Senoko raised this proposal, they were confident that they are able to meet contingency reserve performance standards from an offline state. Hence, Senoko did not think that it is meaningful to require a non-spinning OCGT to be synchronised to the grid in order for it to provide reserve. It should not be so if the OCGT can meet the reserve requirements from an offline state. Senoko believes that it is a matter of defining what the contingency requirement is.

7.3.1 Mr Calvin Quek also pointed out that when the Fast Start Service Ancillary Agreement is introduced, the Risk Adjustment Factor ("RAF") under the Market Rules will be readjusted from 1.5 to 1 when fast start service is procured. Technically this part of contingency reserve requirement is provided by offline OCGT through the Fast Start Service Ancillary Agreement, where the OCGT is in an offline state. This is not in-line with the proposal that non-spinning GRFs be required to be scheduled for energy or connected to the grid.

Before addressing Mr Calvin Quek’s point, Mr Soh Yap Choon clarified some of the technical definitions such as spinning, non-spinning, synchronised and non-synchronised. The definition becomes more confusing because of energy storage which are non-spinning devices. Mr Soh informed that PSO is currently still reviewing the reduction of the RAF from 1.5 to 1 with the introduction of the Fast Start Service Ancillary Agreement.

Mr Soh also clarified that PSO does not usually call upon offline OCGT to provide contingency reserve unless there is a shortfall in the contingency reserve. This is because when a contingency event happens, the Market Clearing Engine will schedule the required spinning reserve or...
contingency reserve to cover for that event. PSO will call upon those units that have been scheduled to provide the amount of reserve to support the contingency event.

7.3.2 Mr Calvin Quek asked if the traditional F Class is called upon through communications or automatically. Mr Soh Yap Choon replied that for 10 minutes contingency reserve, PSO could either send the command through its Energy Management System ("EMS") in its Control Centre to the online unit or could call up the online unit that is scheduled for contingency reserve to increase their output to meet that scheduled quantity based on the MCE dispatch schedule. Mr. Quek responded that this proposal will allow offline OCGT to be able to meet the reserve requirements via the latter mode of communications. Mr Soh said that this is workable in an ideal situation. However, there are many steps and checks for a plant operator to activate the offline unit when PSO calls upon the offline unit to provide contingency reserve. Based on past experience, there is a risk where an offline unit fails to ramp up as intended. It is easier for an online unit to ramp up its outputs to increase the load for another 50MW. He highlighted that the online reserves is PSO’s first line of defence whenever there is a disturbance. Hence, the risk is high if the offline unit is unable to deliver as it will put the system at risk. Mr Soh added that perhaps, with more testing and operating experience, and if PSO gathers more confidence on a track record, PSO can revisit this proposal and allow offline units to be included to provide online contingency reserve.

7.4 Dr Toh Mun Heng asked if the costs to consumers for electricity will decrease with the introduction of batteries to support the solar operations in Singapore and whether the economies of scale effect can be realised with GRFs generating below low load value. Mr Joash Seng responded that the introduction of batteries is expected to benefit the system in terms of lower system costs in the long run. He said that one of the reasons for remodelling the reserve envelope for assets like batteries is because the current modeling based on characteristics of conventional generators is not representative of the batteries’ capabilities. With the introduction of assets such as batteries, it frees up the standby capacity for conventional generators to provide energy at higher efficiencies or better heat rates and potentially, lower the long run cost of the system as a whole. Mr Seng added that the proposed limit of 100MW for non-spinning contingency reserve is an initial value which will be reviewed over time. At the start, batteries will provide a maximum of 20MW or so as EMC is only starting to facilitate the entry of batteries into the wholesale market. He explained that batteries are a different class of asset, hence the suggestion to relook at reserve modelling for them.

(Ms Carol Tan left the meeting.)
7.5 Mr Soh Yap Choon clarified that different types of plant technologies come with different operating characteristics. The point for conventional combined cycle plant to start providing reserves is above the minimum stable load as compared to the OCGT where rotating at 3000RPM (or 50hertz) and synchronised and connected to the grid but yet their low load point could be much lower than conventional combined cycle plant. The proposal is to introduce an additional parameter called the “non-spin load point” to model this kind of generation technology to allow them to compete in the reserve market.

7.5.1 Mr Terence Ang sought clarifications on the proposal for OCGT to be at the non spin load point which is at 10 to 20% of the rated capacity before it can be scheduled to provide reserve, Mr Soh Yap Choon clarified that it is up to the individual plants characteristics but while it is usually 10 to 20% of the rated capacity, some plants can go as high as 30%. This is why testing is needed to verify the plant’s capability to operate in a stable manner, while synchronized to the grid and spinning at 50Hz, in order to able to ramp up and provide contingency reserve. Mr Soh added that the non-spin load point could vary depending on the individual plant.

7.6 In response to Mr Terence Ang’s query on what is the commercially feasible model for batteries to provide contingency reserve in the market, Mr Joash Seng said that EMC defers to market participants on what is commercially feasible for them. Mr Soh Yap Choon agreed with Mr Seng’s response and said that it actually boils down to how the market evolves and how licensees or MPs see the business case and decide if they want to join the market.

7.7 Mr. Cheong Zhen Siong asked if there is a preference in terms of system reliability to have batteries provide regulation rather than contingency reserve, and the preferred portfolio for the amount of batteries to use. Mr Soh Yap Choon informed that the EMA is currently doing test bedding of Energy Storage Systems in Singapore to have a better understanding of the performance and requirement of batteries in providing regulation or contingency reserve, or a mixture of both. EMA will subsequently provide an update on the requirements for Energy Storage System to provide reserves in the Transmission Code or the System Operation Manual.

7.8 Dr Toh Mun Heng questioned if there will be a situation where there will be too many batteries and too little OCGT, resulting in a higher cost situation for the market as a whole. Mr Joash Seng said that the testbeds that EMA is currently conducting will help to assess what is a viable mix of batteries and conventional generators. Batteries cannot exist solely without spinning generators in the first place. Other generators will also need some help to manage the intermittency due to solar assets. Mr Soh Yap Choon added that gas fired combined cycle plants will still likely be the base-load plants in the system. Batteries are typically meant for short duration and will have to be frequently recharged to perform again. This is unlike fossil fuel plants that can run 24/7 so long as there is fuel and the plant is in good condition. Currently, base-load plants are all gas fired combined cycle plant.
7.9 The Chairman noted the RCP’s preference to refer this concept paper to the TWG for a deeper study. He proposed that the concept paper be referred to the TWG to study associated issues such as whether generators/storage facilities can operate below minimum stable load in a viable manner, different options to modify the reserve envelop and implementation costs, if the RCP supports the introduction of generation facilities with loading below LowLoad point or batteries into the market. The RCP agreed with the Chairman’s proposal.

7.10.1 The Chairman went on to call for a vote on the RCP’s decision to support the proposal to allow primary and contingency reserves to be provided from generation facilities with loading below LowLoad point and to task the TWG to study associated issues and report its findings to the RCP.

7.10.2 Therefore, the RCP by majority vote supported the proposal. The following RCP members supported:

- Mr Henry Gan (Representative of EMC)
- Mr Soh Yap Choon (Representative of the PSO)
- Mr Calvin Quek (Representative of Generation Licensee)
- Mr Sean Chan (Representative of Retail Electricity Licensee)
- Mr Terence Ang (Representative of Retail Electricity Licensee)
- Mr Song Jian En (Representative of Retail Electricity Licensee)
- Mr Cheong Zhen Siong (Representative of Wholesale Electricity Trader)
- Ms. Ho Yin Shan (Representative of the market support services licensee)
- Dr Toh Mun Heng (Representative of Consumers of Electricity in Singapore)
- Mr YK Fong (Representative of Consumers of Electricity in Singapore)
- Mr. Tan Chian Khong (Person experienced in financial matters in Singapore)

The following RCP member abstained:

- Mr. Tony Tan (Representative of Generation Licensee)

8. Management of Topics for Rules Change Panel Work Plan
(EMC/RCP/120/2021/07)

Ms Qin Weixiao presented the paper that proposes an approach to remove issues that were repeatedly ranked low in previous exercises from the work plan to maintain efficiency and quality of prioritization exercises.

8.1 Ms Qin Weixiao gave a background on how the RCP work plan prioritization exercise is conducted annually and the potential reasons for some proposals to be perennially ranked low and the impact of long list of work plan issues.
8.2 Ms. Qin Weixiao went on to propose an approach to remove work plan issues based on the age of issue and ranking record. Accordingly, the following 6 issues were identified and proposed to be removed from RCP work plan:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Proposals</th>
<th>Received in Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modelling of on-site ambient temperature into the MCE such that GTs/CCPs’ maximum capacity are adjusted dynamically</td>
<td>2009</td>
</tr>
<tr>
<td>2</td>
<td>Removal of Singapore Government Treasury bills as acceptable credit support</td>
<td>2012</td>
</tr>
<tr>
<td>3</td>
<td>Removal of the first-approach of Constraint Violation Penalties (CVP) rerun</td>
<td>2013</td>
</tr>
<tr>
<td>4</td>
<td>Review of the timeline for meter data investigation and adjustments after notice of dissent has been raised</td>
<td>2016</td>
</tr>
<tr>
<td>5</td>
<td>Invalid load ramping constraints in the Rules Modification for EMA’s “Implementing Demand Response in the National Electricity Market of Singapore”</td>
<td>2016</td>
</tr>
<tr>
<td>6</td>
<td>Removal of price warning advisory notices</td>
<td>2016</td>
</tr>
</tbody>
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8.3 In response to the Chairman’s question about the number of issues on the work plan now, Ms. Qin Weixiao said that the prioritisation exercise has not been concluded and EMC is still receiving new proposals from the market. She estimated that the number of issues on the work plan now is in the range of 50s. The Chairman noted that there are 50 issues to be prioritised and each year only the top 10 to 12 issues made it into the actual work plan and the remaining issues will be deferred to the subsequent year for prioritisation again.

8.4 Mr Soh Yap Choon noted that issues that have been removed can be re-submitted for prioritisation exercise again and asked on what basis will the RCP consider the issues again if it has been removed due to low ranking. Ms. Qin Weixiao replied that EMC is only trying to manage the number of issues on the work plan. For issues that have been removed, market participants or stakeholders can always resubmit the issues with a more detailed draft of the proposal and elaboration on the benefits to the market for this issue to be potentially ranked higher than it used to be.

(Mr Tony Tan left the meeting.)
8.5 Mr Soh Yap Choon commented that it may not be possible to implement some of the rules based on the current voting structure where PSO only has 1 vote in the RCP. Ms. Qin Weixiao responded that every stakeholder in the market has 1 vote to give EMC their ranking in terms of importance and urgency. If the general market fails to see substantial benefits in proposals, then those proposals will be ranked low. Mr. Poa Tiong Siaw added that the main objective of this proposal is to trim down the number of issues so that the prioritisation exercise can be efficient and effective. The proposal will not be able to resolve the issue where a certain class of market participants or stakeholders feel very strongly about the need for a certain change. The concern applies to all other market participants in equal measure.

8.6 Mr. Henry Gan remarked the EMC Market Operations would like to streamline certain processes to make things more efficient on the operation sides which may not translate immediately to visible benefits for the market. Hence, issues submitted by EMC have been ranked low perennially. He added that EMC does not get to vote during the prioritisation exercise and hopes to be included in the ranking exercise going forward.

8.7 Mr YK Fong suggested informing the stakeholder whose issues have been ranked low after 2 prioritisation exercises so that they can take some action before the 3rd prioritisation exercise. EMC noted Mr Fong’s suggestion.

8.8 Mr. Sean Chan suggested having a fixed number of issues in the RCP work plan by keeping minimally the top 20 or 25 issues. Ms Qin Weixiao noted Mr. Chan’s suggestion and added that EMC has been dealing with more than 30 issues for the past 5 years and the number of issues that EMC can conclude is more or less the same. EMC is expecting this trend to continue.

8.8.1 Mr Soh Yap Choon asked usually how many rule changes are completed in a year. Mr Poa Tiong Siaw replied that there are usually 11 or 12 issues in the RCP work plan every year and an average of 8 rule changes are completed. He explained that when a proposal is being discussed at the prioritisation exercise, the full complexity of the issue may not be obvious. Hence, it is difficult to fix a number in the RCP work plan. EMC have explored internally the option of fixing a number in the RCP work plan but felt there was no strong justification to decide on any number. That is the reason why EMC proposes to take a percentage approach rather than zoning in on a particular number.

8.8.2 The Chairman agreed that the number of issues that the RCP can feasibly complete within the year depends largely on the complexity of the issues. The other challenge that the Market Administration Team faces is when there are EMA-directed rules changes. The team’s resources will be diverted to deal with EMA-directed rules changes, leaving diminished resources to work on the RCP work plan. Given the constraints, it is not possible to guarantee closure of a fixed number of issues per year.
8.8.3 Mr Soh Yap Choon raised the concern where issues are being removed and then resubmitted as he does not see any compelling reason for the ranking to change if the panel is the same or unless the market situation has changed. He suggested that EMC keeps only the top 30 issues a year in the RCP work plan after the prioritisation exercise and drop the remaining issues. For issues that are dropped, the proposers can resubmit their proposal again for the next prioritisation exercise. Mr Poa Tiong Siaw hopes that stakeholders invest in thorough thinking in their proposals so that EMC can more readily and thoroughly assess them. Mr Poa said that the suggestion of keeping to the top 30 issues in the RCP work plan will work if the RCP is supportive.

8.9 Dr Toh Mun Heng asked if there is a standard template for the stakeholders to complete to help make the proposals submitted more robust for evaluation. Ms. Qin Weixiao replied that EMC do provide a template when sending out invites to the industry for new proposals. The proposer is expected to fill in the necessary details including the deemed impact, the benefits and costs to the industry. However, some of the proposals received just lacked details for other stakeholders to consider them important.

8.10 The Chairman called for a vote on the following EMC’s recommendation:

a. support the proposed removal of 6 existing work plan issues, and
b. support the proposed approach in which an existing issue not ranked in the top half in the 3 immediately preceding exercises be automatically removed from a prioritization exercise.

8.10.1 The RCP by majority vote supported EMC’s recommendation as stated above.

The following RCP members supported EMC’s recommendation:

- Mr. Calvin Quek (Representative of Generation Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Terence Ang (Representative of Retail Electricity Licensee)
- Mr. Song Jian En (Representative of Retail Electricity Licensee)
- Ms. Ho Yin Shan (Representative of the market support services licensee)
- Dr. Toh Mun Heng (Representative of Consumers of Electricity in Singapore)
- Mr. YK Fong (Representative of Consumers of Electricity in Singapore)
- Mr. Tan Chian Khong (Person experienced in financial matters in Singapore)

The following RCP members did not support EMC’s recommendation:

- Mr. Soh Yap Choon (Representative of the PSO)
The following RCP member abstained:

- Mr. Henry Gan (Representative of EMC)
- Mr. Cheong Zhen Siong (Representative of Wholesale Electricity Trader)

Therefore, the RCP by majority vote supported the proposal.

There being no other matters, the meeting ended at 12.15pm.

Toh Seong Wah
Chairman

Minutes taken by:
Angeline Tan
Executive, Legal and Corporate Secretariat

Approved at the 121st RCP Meeting held on 10 March 2021