MINUTES OF THE RULES CHANGE PANEL
105TH MEETING
HELD ON TUESDAY, 13 NOVEMBER 2018 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
Soh Yap Choong             Carol Tan
Ho Yin Shan                Matthew Yeo
Sean Chan                  Tan Jun Jie
Tan Chian Khong            Y K Fong
Teo Chin Hau               Vijay Sirse
Dr Toh Mun Heng

Absent with
Apologies:                Tony Tan

In Attendance:
(EMC)                     Veronica Rodriguez  Wang Jing
                          Lucia Loh                   Jo Ong
                          Qin Weixiao                Aiko Lee

1. Notice of Meeting
The Chairman called the meeting to order at 10.15am. The Notice and
Agenda of the meeting were taken as read.

2. Confirmation of Minutes of the 104th RCP Meeting
The Minutes of the 104th RCP meeting held on 11 September 2018 were
noted and the RCP approved the Minutes.

3. Matters Arising from the 104th RCP Meeting
   - EMC Board’s request to consider mandatory auto-renewal of
     Banker’s Guarantees and Standby Letters of Credit

At the 104th RCP meeting, the Chairman has suggested that the RCP write
to the EMC Board to express the RCP’s views on whether or not it is
necessary to amend the Banker’s Guarantee (“BG”) template further to
make it mandatory for BGs to be auto-renewed and that EMC will draft the
letter and circulate it to the RCP.

3.1 Ms. Veronica Rodriguez updated that EMC has circulated the draft letter to
the RCP, before presenting it to the EMC Board at its Board meeting held
on 16 October 2018. The EMC Board has noted RCP’s views with no further
comments.
4. Monitoring List

On the attendance of RCP members, Ms. Rodriguez informed that Mr. Daniel Lee (representative of the retail electricity licensee class of market participant) resigned from his nominating organization, YTL PowerSeraya, and hence, had resigned from the Panel. EMC has called for nominations for a replacement.

The RCP noted the rest of the contents of the Monitoring List.

5. Summary of Outstanding Rule Changes

The RCP noted the summary of outstanding rule changes.

6. Rules Change Work Plan Status Update

The RCP noted the update on the Rules Change Work Plan.

7. Publication of Offer Data
(Paper No. EMC/RCP/105/2018/355)

Ms. Lucia Loh recapped the paper, previously presented at the 102nd and 103rd RCP meetings, which assesses the current publication of offer data and addresses two related proposals to (i) review the dimensions of the data format (level of aggregation, masking and timing of publication) in which offer information can be released and (ii) extend the publication of offer information for reserve and regulation.

7.1 Ms. Loh informed the RCP that at the 103rd RCP meeting, the RCP supported publishing reserve and regulation supply curves with similar data format dimensions as that for energy. Further, the RCP had supported commencing implementation from March 2019 (i.e. after EMC’s server technology refresh project).

7.2 Ms. Loh then highlighted to the RCP that there are some limitations in using offer data alone to corroborate real-time scheduling and price outcomes. She noted that using the published offers may be insufficient and possibly misleading. EMC assessed the issue by conducting a study on the difference between the real-time outcomes and outcomes inferred solely using published data such as the system-wide requirement and offer data that is proposed to be published. She gave an illustration of the methodology of the study and presented the results of the study.

7.2.1 Mr. Tan Jun Jie asked if the study was conducted for each individual product. Ms. Loh replied that it was, and added that the study uses the system-wide energy, reserve and regulation requirements to construct what a participant would have been able to derive based on the information that is published.
7.3 Ms Loh then presented a summary of the proposed modifications to the market rules to give effect to the RCP’s decision at the 103rd RCP meeting, and recapped the implementation cost and time estimates.

7.3.1 In response to Mr Tan Chian Khong’s query about why the aggregated energy, reserve and regulation offer quantities are proposed to be published only 28 days after each trading day, Ms Loh replied that this follows from the current publication for energy offers, which was decided by the EMA in 2014 when they were reviewing the types of market information required to facilitate spot and futures trading. She added that based on the decision paper, the EMA had decided on it based on the practices of other jurisdictions and also their opinion of the time lag required for the information to be less sensitive.

7.4 Ms Loh informed the RCP that the proposed modifications to the market rules were published on 8 October 2018 for consultation. Comments were received from YTL PowerSeraya, which were noted by EMC.

7.5 EMC recommended that the RCP
a) support the proposed modifications to the market rules;
b) recommend that the EMC Board adopt the proposed modifications; and
c) recommend that the proposed rule modifications to the market rules come into force 20 calendar weeks (i) after the date on which the approval of the Authority is published by the EMC or (ii) March 2019, whichever is later.

7.6 The RCP by majority vote supported EMC’s recommendations.

The following RCP members supported EMC’s recommendations:
- Mr. Henry Gan (Representative of EMC)
- Mr. Tan Jun Jie (Representative of Generation Licensee)
- Mr. Teo Chin Hau (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Vijay Sirse (Representative of Retail Electricity Licensee)
- Mr. Matthew Yeo (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 from voting:
- Mr. Soh Yap Choon (Representative of the PSO)
8. **Restoration of Load Registered Facilities Activated to Provide Reserve**  
(Paper No. EMC/RCP/105/2018/CP74)

Ms. Wang Jing presented the paper which assesses the proposal to allow load registered facilities (LRFs) which have been activated to provide reserve (also known as interruptible loads (ILs)) to resume consumption for dispatch periods in which they are not scheduled to provide reserve. Specifically, the issues examined in the paper and EMC’s assessment are summarised as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Issue</th>
<th>EMC’s Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Whether the PSO’s clearance is required for IL restoration</td>
<td>Yes, to safeguard system security, PSO’s clearance is required.</td>
</tr>
<tr>
<td>2</td>
<td>Performance standards set out in market rules and the system operation manual (SOM) are inconsistent with the requirements in practice</td>
<td>Propose to (i) stipulate maximum interruption duration (of 120 minutes), beyond which, LRFs should be allowed to seek compensation, and (ii) publish statistics on frequency and duration of past IL activation to provide more realistic estimates for existing and potential IL providers.</td>
</tr>
<tr>
<td>3</td>
<td>Prolonged IL interruption due to contingency reserve shortfall in periods following IL activation</td>
<td>EMC’s view is that unless the total scheduled reserve quantity falls below the core reserve requirement, restoration should be allowed once enough energy is generated to serve load and system frequency have normalised.</td>
</tr>
<tr>
<td>4</td>
<td>Obligation for LRFs to revise reserve offers after activation</td>
<td>Propose allowing LRFs to revise reserve offers within gate closure to reflect revised capabilities following IL activation.</td>
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8.1 Ms. Wang informed the Panel that the concept paper was published on 9 October 2018 for consultation. Comments received from Diamond Energy Merchants, Senoko Energy, Tuas Power Generation, YTL PowerSeraya, Keppel, and Red Dot Power were responded to. Ms. Wang also circulated to the Panel comments provided by the PSO on 12 November 2018, which were not included in the paper.

8.2 The Chairman summarised EMC’s views as follows:

(i) System security is still important, i.e. any restoration of IL must be coordinated and approved by PSO in a very orderly manner.

(ii) The proposed maximum interruption duration of 120 mins is an expectation of the performance of IL without compensation and IL providers are entitled to seek compensation beyond the 120 mins duration.

(iii) The publication of statistics on the frequency and duration of IL activation is to give new IL providers more information to enable them to price their service more accurately when entering the market.

(iv) The gate closure exception is to give more accurate offers to better reflect the capability of the IL so that the Market Clearing Engine (MCE) will not procure a set of resources that the PSO is unable to utilise if there is a second contingency event.
8.3 With regard to the comment suggesting for the same proposed gate closure exemption for LRFs to be extended to GRFs, Ms Wang explained that while EMC in principle agrees with the suggestion, EMC feels that it is not necessary to do so given that the MCE would already take into consideration a GRF’s reserve capability when scheduling.

Mr. Tan Jun Jie opined that the EMC’s view is valid given that the MCE considers the GRF’s start generation level before it schedules reserves for the upcoming period and asked if LRFs’ reserve capabilities are modelled in the same way. Ms. Wang replied that for LRFs, they are scheduled purely based on their reserve offers.

Mr. Tan Jun Jie further queried why LRFs’ consumption levels at the beginning of the period (akin to GRFs’ “StartGeneration” level) is not considered by the MCE during scheduling since their consumption levels at the beginning of period would affect how much reserve they can provide during the period. Mr. Vijay Sirse added that the EMC currently does not have the real-time consumption data of individual LRFs.

To Mr. Tan Jun Jie’s question on whether it would make sense to capture real-time consumption data of LRFs in the MCE, Mr. Henry Gan replied that while it can be done, for the MCE to consider the end consumer’s load level will entail a huge amount of the data. Mr. Vijay Sirse explained that IL aggregators do have visibility of the available capacity of their loads and are monitoring them. However, for MCE to capture this data, it means that the MCE will have to process such data and put in place communication protocols with each IL aggregator. This is further complicated by the fact that each IL aggregator could have a different process for monitoring. Moreover, he opined that it is the role of IL aggregators to monitor their constituent loads and ensure that the offered capacities are available. The Chairman added that it is not economical for the MCE to capture the data as such a change will be costly to implement.

8.4 Dr. Toh Mun Heng asked if a business can ensure that there is no supply interruption. Mr. Soh Yap Choon replied that if a business would like a more reliable source of supply, they can approach Singapore Power to be connected to dual sources at a fee or install their own generators. Mr. Soh also clarified that this discussion pertains to loads which are interrupted voluntarily, by participating in the reserve market and offering to be interrupted in return for reserve payments.
8.5 On the proposed maximum interruption duration, Mr. Soh Yap Choon highlighted that how fast PSO can restore loads is subject to system conditions and dynamics and as such, PSO is unable to provide a definite answer as to when the load can be restored. He further explained it is not PSO’s intention to keep curtailing the load as it does not meet PSO’s mandate of keeping the lights on. When the system condition is stabilised, PSO would proceed to restore the load and this was proven on 18 September 2018 blackout incident where load was fully restored within 38 minutes.

He also commented that in cases of prolonged load interruption, one of the main issues is whether the current Constraint Violation Penalty (“CVP”) values is set at an optimal level. From past incidences, the observation was that the CVP level was set in such a way that it chose to procure less reserve (and thus incur contingency reserve violation) even though there are still reserve capacities available.

Such CVP-related shortfalls are unlike that of 18 September 2018, where there were actual, physical shortfalls due to the forced outage of two generators which led to the need to curtail load. Even then, the PSO had restored load within 38 minutes when other generators came back online, and the system was stabilised. In contrast, nowadays, there are frequent reserve shortfalls leading to the declaring of emergency operating state or high risk of emergency operating state. He opined that the outcome was mainly due to the current parameters setting for CVP where MCE fails to schedule sufficient reserve in the system. He suggested that the CVP parameters be reviewed to deal with this issue of MCE not scheduling sufficient reserves even if there is sufficient capacity to provide reserve.

8.5.1 With reference to the observation that prolonged interruption had not occurred since 2017, Mr. Vijay Sirse pointed out that a prolonged IL activation event had just happened two weeks ago (on 29 October 2018).

8.5.2 Mr. Teo Chin Hau agreed with Mr. Soh Yap Choon that there is a contingency shortfall issue and IL is being used to solve this issue.

Ms. Wang Jing said that in the previous RCP paper, the CVP for reserve was adjusted based on the rationale that the RCP at that time had adopted, which is that serving load has a higher priority than meeting the non-core reserve requirement. She explained that this is why the CVP for non-core reserve was set much lower. In this case, if an IL has not submitted any offer for reserve, it is considered a load and if that load is used to provide reserve or to reduce reserve shortfall, it is not in line with the rationale adopted by the previous RCP.

Mr. Soh Yap Choon said that he is not disputing the CVP setting which prioritises serving loads over reserve and clarified that there is actually no real shortfall as seen in past incidents but rather an outcome caused by market behaviour. Mr Tan Jun Jie said that physically there are reserve quantities offered but the MCE, based on the MCE’s methodology, decides not to procure reserve from offers which are
priced above the CVP level, which then leads to the situation where reserve is available but are not scheduled as they are offered at a higher price.

Ms. Wang Jing asked if it is necessary to use IL to offset the impact of the contingency reserve shortfall. Mr. Soh said that this is because contingency shortfall would cause the system to enter into an emergency operating state where PSO will need to keep activated IL interrupted in order not to worsen the situation. Ms. Wang Jing said that the PSO is given the authority to keep IL interrupted and asked if that is the only solution or could PSO instruct generators to generate more instead. Theoretically, it may also be a better solution for generators as they will receive energy payment. Mr. Teo Chin Hau agreed.

The Chairman said that it is a valid point as he noted that the MCE currently choose to incur violation rather than procure sufficient reserve.

Mr. Soh Yap Choon suggested that current CVP parameters should be reviewed to examine why there is a frequent contingency reserve shortfall.

Ms. Lucia Loh sought to understand the reason for the need to keep IL interrupted. She said that if there is enough energy scheduled to meet demand in a given period following a contingency event, the scheduling of contingency reserve shortfall should not affect the restoration of ILs. Mr. Soh Yap Choon explained that if PSO restores the ILs, there will be even more shortfall because the system-wide load is higher. Ms. Loh shared that such shortfall exists in reserve which should not affect the physical market of energy.

With reference to the proposal to allow IL to change their offers within gate closure, Mr. Teo Chin Hau asked about the definition of non-compliance and if it would constitute a non-compliance case if IL providers do not revise their offers after an activation. Ms. Wang Jing replied that the proposed change is to allow them to revise offers to reflect the capability and subsequently expect them to comply with the schedule. Under the EMA's proposed penalty framework, IL will be penalised if they are scheduled and did not meet the scheduled reserve.

Mr. Tan Jun Jie added that the question is what if they have to remain curtailed for a period of time and IL choose to not to revise their offers.

Mr. Vijay Sirse said that looking at the penalty rate of $2,500/MWh and the normal contingency reserve price of less than $20/MWh, there is no reason for IL providers not to perform as the penalty is 100 times more than the payout (i.e. the reserve price). The Chairman noted Mr. Sirse’s comments and said that this is one of the reasons why the exception for gate closure is proposed.
8.7 Mr. Tan Jun Jie asked if the LRFs are aware of the performance standards of being capable of achieving its scheduled MW response within 10 minutes when instructed to do so and sustain it for at least 30 minutes or until PSO’s clearance is obtained. Mr. Soh Yap Choon replied that this is clearly stated in the SOM and the Frequently Asked Questions document, which has been in place since 2004.

8.8 In response to Mr. Tan Jun Jie’s query on the mechanism for compensation for IL providers that have to remain interrupted beyond the proposed 120 minutes after IL activation, Ms. Wang Jing said that the compensation would be based on the existing market rules provisions.

Mr. Tan Jun Jie noted that at the 76th RCP meeting, the RCP had approved a review of compensation guidelines but was not adopted by EMA. He suggested reviving the review of the compensation guidelines together with the compensation mechanism of LRFs. Chairman said that at that time, the RCP has endorsed a set of guidelines to be applied to compensate for generators.

8.9 EMC recommended that the RCP supports the following proposals:
   a) define a maximum interruption duration of IL activation, beyond which the IL service providers should be allowed to seek for compensation. The proposed duration be set at 120 mins, or three periods after the IL activation;
   b) publish statistics on the frequency and duration of IL activation, and
   c) allow offer revision within gate closure for LRFs following an IL activation.

8.10.1 The Chairman first called for a vote on the decision to define a maximum interruption duration for IL activation, beyond which the IL service providers can be allowed to seek for compensation.

The following RCP members by majority vote supported:
- Mr. Henry Gan (Representative of EMC)
- Mr. Tan Jun Jie (Representative of Generation Licensee)
- Mr. Teo Chin Hau (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Vijay Sirse (Representative of Retail Electricity Licensee)
- Mr. Matthew Yeo (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)
Minutes of 105th RCP Meeting – 13 November 2018

The following RCP member abstained from voting:

- Mr. Soh Yap Choon (Representative of the PSO)

8.10.2 The Chairman next called for a vote on the decision on whether the duration is to be set at 120 minutes or three periods after the IL activation.

The following RCP members by majority vote supported the decision to set the duration at 120 minutes instead of three periods after the IL activation:

- Mr. Henry Gan (Representative of EMC)
- Mr. Tan Jun Jie (Representative of Generation Licensee)
- Mr. Teo Chin Hau (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Vijay Sirse (Representative of Retail Electricity Licensee)
- Mr. Matthew Yeo (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 from voting:

- Mr. Soh Yap Choon (Representative of the PSO)

8.10.3 The following RCP members by majority vote supported the proposal to publish statistics on the frequency and duration of IL activation.

The following RCP members supported:

- Mr. Henry Gan (Representative of EMC)
- Mr. Tan Jun Jie (Representative of Generation Licensee)
- Mr. Teo Chin Hau (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Vijay Sirse (Representative of Retail Electricity Licensee)
- Mr. Matthew Yeo (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** from voting:
- Mr. Soh Yap Choon (Representative of the PSO)

8.10.4 The following RCP members **by majority vote supported** the proposal to allow offer revision within gate closure for LRFs following an IL activation.

The following RCP members **supported**:
- Mr. Henry Gan (Representative of EMC)
- Mr. Soh Yap Choon (Representative of the PSO)
- Mr. Tan Jun Jie (Representative of Generation Licensee)
- Mr. Teo Chin Hau (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Vijay Sirse (Representative of Retail Electricity Licensee)
- Mr. Matthew Yeo (Representative of Wholesale Electricity Trader)
- Ms. Ho Yin Shan (Representative of the market support services licensee)
- Mr. Tan Chian Khong (Person experienced in Financial Matters in Singapore)

The following RCP members **abstained** from voting:
- Dr. Toh Mun Heng (Representative of Consumers of Electricity in Singapore)
- Mr. YK Fong (Representative of Consumers of Electricity in Singapore)

9. **Date of Next Meeting**

The 106th RCP Meeting will be held on Thursday, 17 January 2019.

There being no other matters, the meeting ended at 12.20pm.

**Toh Seong Wah**
**Chairman**

Minutes taken by:
Angeline Tan
Corporate Secretarial Executive