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.

Replacement of Representative of the Transmission Licensee

The RCP was informed that the EMC Board approved the appointment of Ms. Carol Tan from Singapore Power to the RCP with effect from 18 October 2017 to 31 December 2017.

The Chairman welcomed Ms. Carol Tan to the 99th RCP Meeting.

2. Confirmation of Minutes of the 98th RCP Meeting

The Minutes of the 98th RCP meeting held on 12 September 2017 were noted and the RCP approved the Minutes.

3. Monitoring List

The RCP noted the contents 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. **Compensation for Generators Adversely Affected by Price Revision**  
(Paper No. EMC/RCP/99/2017/346)

Ms Lucia Loh recapped the paper which assessed the proposal to compensate generators which are adversely affected by price revision, except that of Type 3, where a compensation calculation methodology is already provided for in the market rules.

6.1 Ms Loh informed the Panel that when price revision is carried out, some generation registered facilities ("GRFs") could receive a revised market energy price ("MEP") which is lower than the offer price of energy that they have generated, thereby incurring out-of-pocket costs or losses. EMC has assessed that it is unfair and undesirable for generators to be negatively impacted financially from following an erroneous ex-ante price signal. Hence, EMC proposed to compensate generators based on the difference between their offer price and revised MEP, for quantities generated in adherence to dispatch instructions.

6.2 It was noted that the Panel had by majority vote at the 98th RCP meeting, supported the proposed compensation methodology and for such compensation to be initiated by market participants (MPs).

6.3 Ms Loh went on to recapitulate the proposed compensation methodology and the current procedures for MP-initiated compensation requests under Sections 3.11 and 3.12 of Chapter 3 of the Market Rules, which would also apply to the proposed compensation examined in this paper.

She also briefed the Panel on the timeline for price finalisation and settlement statement issuance, noting that in the proposed rule modifications, the 10 business day timeline within which MPs must submit requests for compensation will begin from the date of issuance of the final settlement statement. This was so that the compensation claim could be based on data used in the final settlement statement.

6.4 Ms Loh then presented a summary of the proposed rule modifications.

6.4.1 Mr Dallon Kay asked if the provisions in the new section 10.2.10 of Chapter 6 allows for non-generators, such as load registered facilities participating in energy market under the demand response programme, to also be compensated arising from price revision. Ms Loh replied that the proposal applies to GRFs only.

6.4.1.1 Mr Kay suggested extending the provision for compensation to other facilities participating in the energy market such as demand response. Mr Daniel Lee said that this rule change is for generators and has been long outstanding even before demand response was introduced. He would like to keep the matter for non-generators as a separate issue.
6.4.1.2 The Chairman asked if the same analysis for GRFs would apply for demand response load facilities, or will a different analysis be required. Ms Loh replied that the analysis will be different given that demand response load facilities are paid differently under the current design of the demand response scheme. She added that the proposed rule modifications were drafted based on MPs with one or more GRFs. She suggested that EMC can analyse Mr Kay’s suggestion as a new issue.

6.4.1.3 Mr Luke Peacocke agreed that in principle, if GRFs are compensated, then demand response load facilities should also get compensated. He said that it will take EMC time to perform the new analysis and suggested that this issue be dealt with as a matter arising expediently.

6.4.1.4 The Chairman agreed that Mr Kay has raised a valid point and that EMC has to consider all classes of MPs. He agreed with Mr Peacocke’s suggestion for this matter to be followed up as a matter arising from this meeting.

6.4.2 Ms Loh highlighted to the Panel that Mr. Soh Yap Choon (Representative of the PSO), though absent from the meeting, submitted his comments in advance via email. In his email, Mr. Soh suggested that the new section M.3.4 of Appendix 6M be changed as follows:

M.3.4 For each request for compensation under section 10.2.10 of Chapter 6 that is received by the EMC, the EMC may request for the PSO to **submit** furnish the following data to the EMC in respect of the generation registered facility for the dispatch period that the compensation request relates:

M.3.4.1 whether the generation registered facility was at all relevant times operating under AGC; and

M.3.4.2 if the generation registered facility was not at all relevant times operating under AGC, provide the dispatch instruction relating to the highest energy output level (in MW) that is issued by the PSO to the generation registered facility.

The PSO shall **provide** the aforementioned data within 3 business days of the EMC’s request.

6.4.2.1 The Panel tasked EMC to check on the legal distinction between the words “submit”, “furnish” and “provide”. EMC is also tasked to check with the PSO on their concern over the use of the word “submit”. The Panel will thereafter respond by circulation.

6.5 Ms Loh presented to the Panel the following two implementation approaches provided by EMC Market Operations for MP-initiated compensation:

Option 1: EMC will use internal Excel tool to validate and facilitate the claim process.
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Option 2: EMC will develop an internal system platform to validate and semi-automate the claim process.

Ms. Loh added that under both options, MP will submit their request using an excel template.

6.5.1 Mr Henry Gan explained to the Panel that the estimated operational cost of 2 man-days per claim (i.e. per GRF per dispatch period) under Option 1 is not under EMC’s budget and will be claimed through exogenous costs.

6.5.1.1 Mr Peacocke sought clarification on why operational costs is considered exogenous costs, given that the compensation claim is due to price revisions, which is part of EMC’s daily operations. Mr Gan replied that his view is that the service (of processing compensation claims) is new and there will be recurring costs incurred.

6.5.1.2 In response to Mr Sean Chan’s query about the frequency of such claims, Ms Loh replied that based on 5.5 years of data, there are on average 2.38 GRFs affected per re-run period. However, this number reflects a worst-case scenario since it includes all GRFs which had a lower revised Market Energy Price. She noted that not all such GRFs will make a claim, as they may not even be generating during those periods. Mr Peacocke added that such claims are expected to be a rare occurrence and cited that Senoko Energy would probably have made only 2 or 3 claims over a 5-year period if the proposal was implemented.

6.5.1.3 Mr Peacocke asked about the operational effort of 2 man-days per claim, noting that the proposed compensation calculation methodology seems straightforward. Mr Gan replied that for each claim EMC is required to conduct various tasks, such as pre-qualification checks to determine the GRF’s eligibility, verification of data, establish if the GRF is under AGC and invoicing.

6.5.1.4 Mr Daniel Lee commented that the requirement of 2 man-days per claim is too long and requested for EMC to review it. Mr Gan said that EMC could take less time per claim if the claims are similar.

6.5.2 On Mr Phillip Tan’s query on the costs of 2 man-days, Mr Gan replied that the rate of 1 man-day is $800, and hence it is $1,600 per claim.

6.5.3 Mr Kay asked how many man-days of operational costs are required for EMC-initiated claims. Mr Gan clarified that the process will be automated if it is EMC-initiated and, as presented at the 98th RCP meeting, would cost about $245,000 in additional implementation costs. There will be minimal operational costs incurred.

6.5.4 Mr Gan noted that EMC does encounter times when the prices of all 48 periods of a trading day are revised. He said that during such times, there is the possibility that EMC could receive a lot of compensation requests. EMC may not be able to notify MPs of their compensation outcome within 20 business days as proposed. He suggested adding a provision to allow EMC to write to the claimant MP to request for an
extension of the deadline to notify them of the compensation outcome when EMC encounters an overwhelming volume of compensation requests. Ms Loh responded that the 20 business day timeline is an existing provision in the market rules. The Chairman commented that his view is that there is no need to include such provision since the occurrence is rare. He added that if EMC is unable to process claims in time and breaches the rules, the Market Surveillance and Compliance Panel would likely take into consideration the overwhelming volume of claims received by EMC.

6.6 EMC recommended that the Panel:

a) support the proposed modifications to the market rules;
b) support implementing Option 1;
c) recommend that the EMC Board adopt the proposed rule modification; and
d) recommend that the proposed rule modification comes into force 29 weeks after the date of which the approval of the Authority is published by EMC.

6.7 The Panel **unanimously supported** EMC’s recommendations as stated above, except for (a) which is subject to the final wordings of section M.3.4 of Appendix 6M which EMC will circulate to the Panel for approval.

6.8 **Post-meeting note**: EMC checked with Mr Soh Yap Choon on the rationale for suggesting changes to section M.3.4, who responded that the changes were suggested because section M.3.4 refers to a request for data.

EMC also informed the Panel that EMC’s internal legal counsel agreed that using “provide” may be more appropriate given that in the case of section M.3.4, the PSO is merely providing information for EMC to assess or validate a compensation request. Hence, EMC recommended that the Panel support replacing the word “submit” with “provide” in both instances in the new section M.3.4.

6.8.1 By circulation, the RCP **by majority vote supported** the **revised proposed rule modifications** as set out in **Annex 2**.

Mr Dallon Kay conveyed that he do not agree with introducing a distinction between “submit” and “provide” in the market rules. He supported the original drafting, since “submit” is already being used in the market rules and to avoid a separate review of the market rules being undertaken in future to align the terminology.

The details of the voting outcomes are:

Those who voted in support of the **revised proposed rule modifications** (i.e. use “provide” in section M.3.4):

- Mr. Henry Gan (Representative of EMC)
- Ms. Priscilla Chua (Representative of Generation Licensee)
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- Ms. Grace Chiam (Representative of Generation Licensee)
- Ms. Carol Tan (Representative of Transmission Licensee)
- Mr. Sean Chan (Representative of Retail Electricity Licensee)
- Mr. Daniel Lee (Representative of Retail Electricity Licensee)
- Mr. Luke Peacocke (Representative of Retail Electricity Licensee)
- Mr. Phillip Tan (Person experienced in Financial Matters in Singapore)
- Dr. Toh Mun Heng (Representative of Consumers of Electricity in Singapore)

Those who voted in support of the original proposed rule modification (i.e. use “submit” in section M.3.4):
- Mr. Dallon Kay (Representative of Wholesale Electricity Trader)

7. Review of Dispute Resolution Procedures
(Paper No. EMC/RCP/99/2017/347)

Ms Jo Ong 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.

7.1 It was noted that the review was conducted by the Panel in consultation with the Dispute Resolution Counselor (“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.

7.2 Ms Ong informed the Panel that arising from the review, PacificLight Power had suggested establishing model arbitration rules in order to standardise the arbitration procedure and to minimise the difference between different tribunals.

7.3 It was noted that the DRC had raised a similar proposal to incorporate model arbitration rules in the Market Rules during the review in 2011. The proposal was not supported by the Panel then due to the cost of incorporating the model arbitration rules and the fact that there had been no arbitration cases since market start i.e. the model arbitration rules had not been tested. It was decided in 2011 that the model arbitration rules should be used as a guide in carrying out arbitration and should be considered to be incorporated in the Market Rules only after they have been tested and refined with adequate experience.

7.4 Ms Ong said that EMC recommends that the model arbitration rules continue to serve as a guide and not be incorporated in the Market Rules as they still have not been tested. She added that the DRC did not recommend any change to the existing DRP.

7.5 Ms Ong updated the Panel that the next review will be conducted by 31 December 2020 and the current timeline in Chapter 3, section 3.15 of
the Market Rules will need to be updated accordingly.

7.6 EMC recommended that the Panel:
   a) support the proposed modifications to the market rules;
   b) recommend that the EMC Board adopt the proposed rule modifications; and
   c) recommend that the proposed rule modifications come into force one business day after the date of which the approval of the Authority is published by EMC.

7.6.1 The Panel **unanimously supported** EMC’s recommendations

8. Publishing Additional Load Scenarios in the Forecast Schedules
(Paper No. EMC/RCP/99/2017/CP71)

Mr Yap Yun Ben presented a paper that assessed 3 proposals on whether to (i) publish additional load scenarios in the short-term schedule (“STS”), (ii) review the granularity and number of load scenarios, and (iii) publish scenarios for different levels of reserve and regulation requirements.

8.1 Mr Yap gave a background on the current publication of load scenarios. He shared that EMC currently prepares and updates 3 load forecasts, i.e. Normal, Low and High Forecasts, which are published in market outlook scenario (“MOS”) and pre-dispatch schedule (“PDS”) only.

8.2 Mr Yap then presented EMC’s analysis of the proposals to publish additional load scenarios in the forecast schedules. He informed that most electricity market operators surveyed do not publish different load scenarios except for Australian Energy Market Operator (“AEMO”) which publishes 43 load scenarios to apply to the base case with varying granularity ranging from ±50MW to ±1000MW in different regions to allow MPs to discover potential risks and opportunities inherent in the supply curve and respond accordingly. The costs and benefits of publishing different load scenarios in forecast schedules are as follows:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>As price signal</td>
<td>Implementation and recurring costs</td>
</tr>
<tr>
<td>Managing spot price risk</td>
<td>Opportunities for exercise of market power</td>
</tr>
<tr>
<td>Encourage demand response</td>
<td></td>
</tr>
</tbody>
</table>

8.2.1 Mr Kay asked if EMC assessed the opportunities for exercise of market power to be significant given the current HHI is less than 1700. Ms Wang Jing replied that no studies have been conducted on this matter but mentioned that such opportunities will be limited by the existence of the 65 minutes gate closure rule.

8.3 Mr Yap then took the Panel through EMC’s assessments of the 3
proposals and the estimated costs and time required.

8.4 It was noted that the concept paper was published for industry consultation on 16 October 2017 and comments on the following were specifically sought:

i. the preferred number and granularity of additional load scenarios to be published which would be useful for them;

ii. the preference for fixed or dynamic (i.e. updated annually) load scenarios; and

iii. the preference for load scenario with the MW value reflecting forced outage

Comments received from 6 MPs were duly noted. It was also noted that there were 3 MPs which supported the proposal and 2 MPs did not. The MPs preferences are summarized as follows:

<table>
<thead>
<tr>
<th>MP</th>
<th>Number of Additional Load Scenarios in STS</th>
<th>Fixed / Dynamic</th>
<th>Additional Load Scenario (to simulate forced outage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacificlight Power</td>
<td>6</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Senoko Power</td>
<td>8</td>
<td>Fixed</td>
<td></td>
</tr>
<tr>
<td>Tuas Power</td>
<td>6 or 2</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Sembcorp Cogen</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Mr Phillip Tan left the meeting.)

8.5 EMC recommended that the Panel:

a) support publishing 2 additional load scenarios in the STS (at ±100MW);

b) do not support the proposal to publish load scenarios for different levels of reserve and regulation requirement; and

c) task EMC to draft the relevant rule modifications
8.6 Mr Daniel Lee queried why the annual operation cost for 4 additional load scenarios at $94,970 is more than double of that for 2 additional load scenarios (at $39,096). Mr Gan explained that the bulk of the cost is due to additional hardware and licence that EMC will have to pay for. This is because with 4 additional load scenarios, an additional core will be required to cater for the existing UAT environment to cater for the additional solve, hence requiring an additional licence, while no additional solver licence is need for UAT environment if only 2 additional load scenarios were introduced.

8.7 Mr Kay opined that the costs for this proposal should be proportionately assigned to this project with the residual being assigned to other initiatives which will benefit from this additional UAT environment as it can be used to support other initiatives and not restricted just to load scenarios.

8.8 The Chairman asked if this additional enhancement is solely for this project only, or will there be other use for it. Mr Gan replied that currently, it is only for this project. Mr Kay noted that for 2 additional load scenarios it can be accommodated in the existing capabilities and said that the enhancements for 4 additional load scenarios should be able to cater for other uses besides this proposal.

8.9 Mr Daniel Lee commented that the EMC IT infrastructure enhancement is less than double for 4 additional load scenarios compared to 2 additional load scenarios, but the annual operation cost for maintenance, monitoring and troubleshooting is more than double. He noted that additional hardware is required for 4 additional load scenarios as the existing hardware is unable to accommodate and asked if there are some cost savings for the EMC IT infrastructure enhancement. Mr Gan shared the cost breakdown for the 4 additional load scenarios case with the Panel.

8.10 Mr Kay asked if the solving can be done sequentially. Mr Gan replied that it could not, as by doing so, EMC might miss the publication deadlines.

8.11 Mr Peacocke noted that EMC did not consider altering the existing load scenarios published in the MOS. He asked if there is a possibility to not publish the load scenarios in the MOS, which are considerably less useful than the STS, and to reallocate the IT resources to the STS, thereby requiring lower implementation costs. He added that since the proposal will not be implemented until January 2019, in view of the server technology refresh, EMC would have more time to examine ways to optimise resources to implement this proposal.

Mr Gan replied that Mr Peacocke’s suggestion is possible if the market feels that the MOS is less useful. The Chairman said that EMC will need to check as the MOS may be solved sequentially because it is run only once a day and there is more time given to solve it, whereas STS should be solved quickly in parallel within 5 minutes.
Mr Daniel Lee agreed with Mr Peacocke’s suggestion. Ms Lucia Loh further clarified with the Panel that, under the market rules, EMC has 9 minutes to produce and publish the STS.

Mr Kay said that once solar forecasting and the range of intermittency becomes quantifiable, it could help in identifying the load scenario that is going to be sufficient for intermittency as a consideration and opined that ±100MW is too much. He proposed that it should be at around ±25 or 50MW instead.

It was noted that the Panel was not ready to vote and would like EMC to rework the proposal based on Mr Peacocke’s suggestion of optimising resources as well as Mr Kay’s proposal for lower MW value.

9. Appointment of Technical Working Group
(Paper No. EMC/RCP/99/2017/08)

Ms Jo Ong recapped that the Technical Working Group (“TWG”) is an industry-resourced group, appointed by the RCP for a 2-year term, which assists the RCP in examining technical market rule changes (typically relating to the Market Clearing Engine (“MCE”) formulation). The TWG comprises eight members as follows:

- Four experts based on nominations from Market Participants (“MPs”)
- One person nominated by the PSO
- One person nominated by the Transmission Licensee
- One MCE expert nominated by EMC
- Chairperson nominated by EMC

Ms Ong informed the Panel that two vacancies have arisen as a result of the resignation of:

- Mr Paul Poh (nominated by EMC) – Chairperson
- Mr Calvin Tan (nominated by PacificLight Power) – Market Participant Representative

It was noted that EMC has invited MPs who are not the nominating organisation of any current TWG member, to nominate a person to replace Mr Calvin Tan. Ms Wang Jing was nominated by EMC to replace Mr Paul Poh as the Chairperson. Candidates to be appointed to fill these vacancies will serve from 15 November 2017 to 31 December 2018.

Three nominations for experts nominated by MPs were received. Based on the standardised CVs received, EMC evaluated the extent to which the nominees possess each of the competencies / experience in the TWG Selection Criteria. Greater weight was given to components that directly relate to dispatch and price discovery processes, as well as the MCE.
EMC recommended that the Panel appoint the following to the TWG for period from 15 November 2017 to 31 December 2018:

- Ms Wang Jing (as Chairperson)
- Mr Calvin Quek (Market Participant Representative)

9.3 Mr Peacocke proposed that the nominees that were not appointed for this vacancy be considered for the next vacancy. Mr Kay also proposed that one of the experts nominated by Market Participants has knowledge in demand-side schemes like interruptible load and demand response in order to better advise the RCP on demand-side related rule changes.

9.4 The Panel **unanimously supported** EMC’s recommendation.

10. **Any Other Business**

10.1 Mr Kay, Mr Peacocke and Ms Priscilla Chua informed the Panel that this meeting will be their last meeting. They thanked the Panel for the past support and wished the Panel all the best.

10.2 The Chairman thanked the Panel for their contributions for the past three years. He informed them that there will be an appreciation dinner and the corporate secretariat executive will be in touch with them shortly.

11. **Date of Next Meeting**

   The 100th RCP Meeting will be held on Tuesday, 16 January 2017.

There being no other matters, the meeting ended at 12.10 p.m.

**Toh Seong Wah**
Chairman

Minutes taken by:
Angeline Tan
Corporate Secretarial Executive