RCP PAPER NO.	:	**EMC/RCP/139/2024/05**
SUBJECT	:	**RULES CHANGE PANEL WORK PLAN 2024**
FOR	:	**DISCUSSION AND DECISION**
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DATE OF MEETING	:	**13 MARCH 2024**

Executive Summary

This paper presents a proposed update of the Rules Change Panel (RCP) work plan, incorporating input from stakeholders following the joint briefing sessions held from 25th to 26th January 2024.

At the 139th RCP meeting, the RCP approved EMC's proposed work plan for April 2024 – March 2025.

1. Introduction

This paper first takes stock of the progress made in the previous work plan approved in March 2023. It then presents existing and new issues raised during the work plan consultation exercise, together with the corresponding rankings and comments from stakeholders. The proposed issues to be tackled over the next 1 year are then tabled for the Rules Change Panel (RCP)'s discussion and approval.

2. RCP's Achievements: April 2023 – March 2024

2.1 Overview

At its 133rd meeting in March 2023, the RCP agreed on the 2023 work plan (see Annex 1) and tasked EMC to monitor its progress. This work plan comprises 39 issues, with 10 to be addressed over the next 12 months (i.e. until March 2024).

Of the 10 issues, the RCP has completed work on 1 of them, including:

(1) Request for EMC to Publish Filtered Reserve and Regulation Supply Curves

The RCP had also supported the removal of 1 issue:

(1) Imposition of Minimum Net Tangible Asset as a Condition of Participation for Retailers

This issue was proposed for removal owing to overlaps with the initiatives in the EMA's final determination paper on "Enhancements to the Regulatory Regime for Electricity Retailers".

At the same time, significant progress has been made on 6 of these issues:

(1) Holistic Review of the Current Prudential Requirement Obligations and its Enforcement Process under the Market Rules

At the 137th RCP meeting, EMC proposed to structure this proposal into 4 sub-proposals, namely:

- Proposal 1: Shortening of the Settlement Cycle (By streamlining of processes within the Settlement Cycle)
- Proposal 2: Adjustment of Average Daily Exposure Calculation
- Proposal 3: Reconfiguration of Credit Support (To consider insurance bonds and mandating a mix of credit support instruments)
- Proposal 4: Residual Default Risk Insurance (Guarding against potential default levy).

The RCP had tasked EMC to prioritise Proposals 1 and 3, and to defer the consideration of Proposals 2 and 4 until there is more clarity on the repercussions from EMA's final determination on the Enhancements to the Regulatory Regime for Electricity Retailers.

(2) Participation of BESS in Energy and Ancillary Services Markets

The RCP discussed this proposal's concept paper at the 133rd RCP meeting and requested for further studies on incorporating a BESS' state-of-charge into market clearing. EMC is studying the issue together with the Technical Working Group and will report back to the RCP when the study is completed.

(3) Holistic Review of the Market Rules Related to Cessation of Business, Liquidation, and Insolvency

At the 138th RCP meeting, the RCP supported EMC's proposal for an automatic suspension framework for cases involving insolvency-related events of default. EMC is working on drafting the rule modifications to effect said proposal.

(4) Review of Scope and Framework for Compensation Arising from Complying with PSO Issued Overriding Dispatch Instructions

The RCP had agreed to review the issues surrounding compensation and price revision together due to their interlinked nature. This issue is currently on hold as EMA had expressed a preference to manage the compensation methodology internally.

(5) Facilitating Integration of Large-Scale Imports into the Market

EMC is working with EMA to identify the scope of the rule changes required to facilitate the import projects at various stages and will prioritise such rule change items accordingly.

(6) Review of Rules Governing Participation and Offers for Batteries and Distributed Energy Resources

EMC has conducted internal studies on how existing participation models for generation facilities can be enhanced to adapt to various business models of different distributed resources.

3. RCP Work Plan Prioritisation Exercise 2023

3.1 List of Issues for Prioritisation

During the joint briefing sessions, EMC presented to stakeholders a list of 39 issues comprising 29 that were carried over from the previous work plan and 10 that were newly raised by stakeholders. The new issues are briefly described below:

(1) When Energy, Reserve or Regulation Shortfall Situation Applies, Allow for Offers of Additional Quantities of Energy, Reserve, and Regulation

When there is a shortfall of either one of energy, reserve, or regulation, this proposal suggests allowing for offers of additional quantities of any of the 3 products. (Proposed by: Tuas Power Generation)

(2) Refund of Credit Support to Market Participants who have Closed the Designated Bank Account for NEMS Settlement

This proposal suggests allowing EMC to offset, from EMC's administrative fees, the credit support pledged by MPs that have been de-registered and have closed their designated bank account. (Proposed by: EMC)

(3) Exclude Provisional Prices from Temporary Price Cap (TPC) Moving Average Price (MAP) Calculation

This proposal suggests excluding prices that are provisional, in the context of reruns, from the calculation of the Moving Average Price that is relevant to the activation and de-activation of the Temporary Price Cap. (Proposed by: Senoko Energy)

(4) Provision of a More Accurate Demand Forecast based on LAR (Look Ahead Run) and DAR (Day Ahead Run)

This proposal calls for more accurate demand forecasts based on the LAR and DAR. (Proposed by: Senoko Energy)

(5) Publication of Other Temporary Price Cap Information

This proposal suggests the publication of the prices cleared by the Market Clearing Engine (MCE) that are not subjected to the TPC, namely for primary reserve, contingency reserve, regulation, and the respective nodal prices. (Proposed by: YTL PowerSeraya)

(6) Review of Standing Probability of Failure (SPF) for New Commissioning Generation Registered Facility (GRF) and Import Registered Facility (IRF)

This proposal suggests setting the SPF of new GRFs and IRFs at 0.001% until more IEQ data for the facility is received. (Proposed by: YTL PowerSeraya)

(7) Speed Up Market Registration Process for Generation Facility Connected at the Distribution Network, e.g. Solar PV

This proposal suggests that EMC, in the course of facility registration, to seek PSO's advice on facilities connected at the transmission network on whether they pose a risk to the system, and the Transmission Licensee's advice for facilities connected at the distribution network level. (Proposed by: Power System Operator)

The comprehensive list of the 39 issues is attached in Annex 2.

3.2 Consultation Process

From 25 January 2024 to 26 January 2024, EMC conducted joint briefing sessions for market participants (MPs) and service providers to refine the scope of the issues and rate each issue according to its importance and urgency[1]. Stakeholders could also vote to remove issues from the list and provide their qualitative comments. Section 4 below summarises stakeholders' ranking, with their comments supplemented in Annex 2.

4. Ranking Methodology

Two methods to determine the overall ranking of each issue are presented for the RCP's consideration:

- **Simple Average Methodology**: Averages scores for 'importance' and 'urgency' of each issue across all stakeholders.
- **Group-Weighted Methodology**: Averages scores for 'importance' and urgency' of each issue across each of the 4 groups of representatives/stakeholders (generation licensees, retail licensees, wholesale trader licensees and service providers). The average of these 4 scores is then calculated.

Table 2 overleaf summarises the ranking results under each of these methodologies, together with an indication of whether work has commenced and the number of stakeholders who proposed to remove the issue, with a detailed breakdown of the ranking results shown in Annex 3.

[1] Responses were received from 23 market participants and 3 service providers, namely EMC, Crystal Clear Environmental, PacificLight Power, PacificLight Energy, National Environmental Agency, PSO, Keppel Electric, Keppel Merlimau Cogen, Sembcorp Cogen, Sembcorp Solar, Sembcorp Power, Sembcorp Floating Solar, Senoko Energy Supply, Senoko Energy, SP Services, Sunseap Energy, Sunseap Leasing, Sunseap Leasing Beta, Solarland Alpha Assets, Shell Eastern Petroleum, Tuas Power Generation, Tuas Power Supply, TP Utilities, Seraya Energy,Taser Power, and YTL PowerSeraya.

Table 2: Work Plan Issue by Rank[2]

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
			On-going Issues			
1	Holistic review of the current prudential requirement obligations and its enforcement process under the market rules	N.A.	N.A.	Y	N.A.	N.A.
2	Participation of BESS in energy and ancillary services markets	N.A.	N.A.	Y	N.A.	N.A.
3	Holistic review of the Market Rules related to cessation of business, liquidation and insolvency	N.A.	N.A.	Y	N.A.	N.A.
4	Review of Scope and Framework for compensation under Chapter 5	N.A.	N.A.	Y	N.A.	N.A.
5	Facilitating Integration of Large-Scale Imports into the Market	N.A.	N.A.	Y	N.A.	N.A.
6	Review of rules governing participation and offers for batteries and distributed energy resources	N.A.	N.A.	Y	N.A.	N.A.

[2] Arising from the RCP's decision at its 78th meeting, ongoing issues need not be ranked.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
			Other Issues			
37	Publication of other Temporary Price Cap (TPC) parameters	1	1	N		
36	Provision of a more accurate demand forecast based on LAR and DAR.	2	3	N	1	▪ The demand forecast methodology is not under the Market Rules. This is not the appropriate platform. EMC should provide this feedback to PSO.
35	Exclude provisional prices from Temporary Price Cap (TPC) Moving Average Price (MAP) calculation	3	2	N		
7	Review of obligation to act within 5 minutes when an action is to be taken “promptly” or “immediately”	4	6	N	1	▪ There is significant impact to system security if Gencos do not notify PSO on the condition of the facility promptly. Whenever a facility trips, PSO will contact the Gencos (the plant operators); and Gencos, as the asset owner, should know whether their circuit breaker is open or closed due to its own assets tripping or whether it is a 'false' alarm indication. That said, agreed that Gencos need time to ascertain the cause of tripping (if indeed the generator had tripped) to rectify it and quickly bring the generator back to service.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
33	When energy, reserve or regulation shortfall situation applies, allow for offers of additional quantities of energy, reserve and regulation	5	5	N		
8	Exemption from Gate Closure Rules for cancelled synchronisation	6	9	N		
39	Speed up market registration process for generation facility connected at distribution network (e.g. Solar PV.)	7	4	N		
25	Enhance the publication frequency of the Pre-Dispatch Schedules (DAR) from every 120 minutes to 60 minutes	8	7	N	1	▪ RCP has agreed to publish additional scenarios for the STS. There is no need to create additional PDS which will result in more system changes and costs incurred.
38	Review of standing probability of failure (SPF) for new commissioning Generation Registered Facility (GRF) and Import Registered Facility (IRF)	9	11	N	1	▪ The SPF calculation methodology is not under the Market Rules.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
30	Load forecasting and MCE dispatch and price determination when contracted Fast Start unit(s) is performing monthly test or when actual activation	10	12	N	3	▪ Following the issuance of the fast start RFP, we understand that the fast start will not be participating in the wholesale market. We seek clarification that the forecasted demand will not be adjusted for the impact of fast start. If so, we propose to remove this issue. ▪ The running of fast start units is to address system security issues such as reserve shortfall or quick restoration of supply during major system disturbances. It will not affect the load forecast.
13	Review of gate closure exemptions following a forced outage	11	26	N	4	▪ We should look to improve existing technology to facilitate faster responses, instead of extending gate closure. ▪ We think this issue is similar to another existing issue (Issue 8). ▪ Gate closure exemptions were reviewed in EMA/RCP/131/2022/CP90.
12	Methodology to calculate Vesting Contract Reference Price (VCRP)	12	10	N		
19	Introduction of SWIFT as a form of Bank Guarantee	13	7	N		

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
17	Additional Market Re-run for Meter Data Error discovered between First and Second Nominated Day	14	23	N	2	▪ We don't see huge adjustments after the 1st rerun, and an additional rerun could incur significant costs. ▪ Existing market settlement timeline provides sufficient opportunities for adjustments. Additional runs will incur higher costs for the market with marginal benefits.
34	Refund of credit support to market participants (MPs) who have closed the designated bank account for NEMS settlement	15	16	N	1	▪ EMC should have the ability to exercise discretion on the need to retain the credit support.
10	Review of Regulation Effectiveness Factor or similar compensation scheme to reward greater responsiveness of facilities for Regulation	16	14	N	2	▪ The addition of a compensation scheme for fast regulation should not be done under a market rule change. ▪ We think current schemes with DR involvement is a good enough incentive for BESS to ramp up/down fast. Contingency reserves should be focused on stability, and not speed. Unless the BESS wants to be grouped as a power generating unit, then, it should be able to participate in primary reserve.
15	Amendments to the StartGeneration used in the real-time schedule (RTS), and the first dispatch period of the short-term schedule (STS) and pre-dispatch schedule (PDS)	17	17	N		

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
23	Review of provisions on suspension and termination orders	18	14	N		
32	To require an MP submitting a request for cancellation of facility registration to also state the intended effective date of cancellation	18	13	N	1	▪ Does not impact the electricity market on a whole.
18	Modelling of on-site ambient temperature into the MCE such that GTs/CCPs' maximum capacity are adjusted dynamically	20	19	N	1	▪ Such discrepancies should have already been factored in during registration.
22	Review of the requirement for registration as commissioning generation facility for generation settlement facilities, except for intermittent generation facilities of aggregate name-plate rating 10MW or more	20	18	N		
20	Review of Expected Net Exposure (ENE) formula and application	22	20	N		
11	Alignment of performance standards of Interruptible Load scheme and Spinning Reserves	23	25	N	3	▪ Propose to remove since IL is currently undergoing a sandbox and will be reviewed. ▪ This issue on IL has been addressed previously by RCP and concluded to compensate IL accordingly. This was implemented (compensation to IL) accordingly. Under the current rule, there are proper

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
						compensation framework in place if IL activations lasted for more than 120 minutes.
24	Review of the timeline for suspension hearing	24	22	N		
27	Adjustment for regulation charges and price neutralisation after final settlement	25	21	N		
31	Redeeming the full amount of an MP's Banker's Guarantees (BGs) upon default	25	24	N	3	▪ There is no justification for EMC to claim more than the MP's outstanding obligations from their BGs. ▪ I think that this notion infringes on the private rights of the participating MP. The MP should do all it can to mitigate the issue. EMC essentially forces all other options away from the MP if upon failure to make full payment, all the BG is being drawn.
21	Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant	27	27	N	1	▪ The enhanced retailer framework can act as a backstop for such payments.
14	Provisions regarding settlement bank and settlement account	28	28	N	2	▪ Costs could be substantial to have more than 1 clearing bank; there are also potential feasibility issues on inter-bank transfers under a tight timeline.
26	Improvement of the prepayment process	29	29	N	1	▪ Suggest a MP transfer the necessary monies to their registered OCBC account via GIRO.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
16	Review of Automatic Financial Penalty Scheme (AFPS)	30	31	N	4	▪ We disagree with the proposed methodology to consider partial trips to be a full outage. ▪ If the system design of the incinerator is such that twin turbines are working for full potential, then a trip in one generator does indeed constitute a failure to comply with power scheduling. Unless the plant can proof that these turbines can function and produce power separately (not indirectly affecting each other when a fault happens), we think they should not be two facilities. ▪ This issue was already discussed in the REVIEW OF AUTOMATIC FINANCIAL PENALTY SCHEME in EMC/RCP/112/2019/CP79.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
9	Review of definition of forced outage in gate closure exemptions	31	33	N	6	▪ We should look to improve existing technology to facilitate faster responses, instead of prolonging gate closure exemptions. ▪ The current definition of forced outage in the market rules is adequate. ▪ The exemption in gate closure is intended for MPs to reflect their machine's capability accurately to the market due to unforeseen circumstance affecting the capability of the machine. ▪ Gate closure exemptions are already reviewed in EMC/RCP/131/2022/CP90. RCP should look at new issues instead.
28	Removal of Second Settlement Rerun	32	30	N	8	▪ We feel that having a second settlement rerun is important in the case of metering errors. ▪ Proposal should be raised again only after the implementation of Issue 17. ▪ The Second Rerun should not be removed as customers purchasing from the market or via Retailers should have an avenue with reasonable timeline to seek for recovery due to meter errors discovered subsequent to the First Nominated date.

Issue No.	Issue Title	Rank (Simple Average)	Rank (Group-Weighted)	Work Started ?	Propose to Remove	Summary of Reasons for Removal
29	Improvement of real-time information flow regarding unplanned outages and return to service	33	32	N	12	▪ We do not think that the reporting of real-time availability needs to be improved. ▪ The current publication of AGOP has sufficient information to show when and which units are currently having a planned outage. An additional section in the EMC website to show unavailable units in real time will be redundant since it increases additional resources and manpower because the AGOP is already in place, and this information will not be accurate as well due to many unforeseen variables. ▪ Proposer is no longer a MP and knowing such information in advance do not seem to aid in managing risk in the short term.

5. Approach to Prioritisation

EMC recommends that the RCP consider the following, which include messages that emerged from the consultation process, in its deliberation:

- Ranking by stakeholders – The rankings by stakeholders indicate which issues are likely to provide the most impact in enhancing the performance of the market.
- Ongoing issues – As considerable effort would have been expended on-going issues, it would be sensible to continue with these work streams.
- Issues that address similar concerns should be combined for efficiency.
- As supported by the RCP in its 120th meeting, to maintain the efficiency and quality of the prioritisation exercises, existing issues not ranked in the top half in the 3 immediately preceding exercises will be automatically removed from the current prioritisation exercise.
- Issue 36: **Provision of a more accurate demand forecast based on LAR and DAR** calls for a review of the demand forecast methodology. This methodology is under the purview of the PSO. EMC therefore proposes to remove this issue and to refer it to PSO.
- Stakeholders had proposed for certain issues to be removed from the work plan, along with reasons. It would be useful for the RCP to deliberate if the following issues that received a significant number of votes for removal should be removed from the work plan.
  - Issue 9: **Review of definition of forced outage in gate closure exemptions,** which received 6 votes for removal.
  - Issue 28: **Removal of Second Settlement Rerun,** which received 8 votes for removal.
- In addition, the following five issues will be automatically removed from the work plan as they were not ranked in the top half in the 3 immediately preceding exercises[3].
  - Issue 21: **Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant**.
  - Issue 23: **Review of provisions on suspension and termination orders.**
  - Issue 24: **Review of the timeline for suspension hearing**
  - Issue 29: **Improvement of real-time information flow regarding unplanned outages and return to service** (also received significant votes for removal)
  - Issue 31: **Redeeming the full amount of an MP's Banker's Guarantee (BGs) upon default**

Considering all of the above, EMC proposes that **12** issues (as set out in Table 3) be addressed in the next 12 months (i.e. from April 2024 to March 2025).

Table 3: Work Plan Issues to be Addressed in the Next 12 Months

Serial No.	Issue Title	Issue No.
1	Holistic review of the current prudential requirement obligations and its enforcement process under the market rules. Review sufficiency of credit support taking into account price volatility.	1
2	Participation of BESS in energy and ancillary services markets	2
3	Holistic review of the Market Rules related to cessation of business, liquidation, and insolvency	3

[3] As supported by the RCP at its 120th meeting

Serial No.	Issue Title	Issue No.
4	Review of Scope and Framework for Compensation Arising from Complying with PSO Issuing Overriding Dispatch Instructions	4
5	Facilitating Integration of Large-Scale Imports into the Market	5
6	Review of rules governing participation and offers for batteries and distributed energy resources	6
7	Publication of other TPC information	37
8	Exclude provisional prices from Temporary Price Cap (TPC) Moving Average Price (MAP) calculation	35
9	Review of Obligation to Act Within 5 Minutes When an Action is to be Taken "Promptly" or "Immediately"	7
10	When energy, reserve or regulation shortfall situation applies, allow for offers of additional quantities of energy, reserve and regulation	33
11	Exemption from Gate Closure Rules for cancelled synchronisation	8
12	Speed up market registration process for generation facility connected at distribution network (e.g. Solar PV.)	39

6. Conclusion

The panel, having considered the list of 39 issues and EMC's recommendations, made the following decisions:

a. The Rules Change Work Plan 2024

The RCP unanimously agreed on the Rules Change Work Plan 2024 (as set out in Table 3) and tasked EMC to monitor its progress.

b. Issues to be Referred

The RCP unanimously agreed to refer the following issue to the PSO:

- Issue 36: **Provision of a more accurate demand forecast based on LAR and DAR**

c. Issues to be Removed

i. Issues that received a significant number of votes for removal

The RCP unanimously agreed to remove the following issues that received significant votes for removal:

- Issue 9: **Review of definition of forced outage in gate closure exemptions**
- Issue 28: **Removal of Second Settlement Rerun**

ii. Issues to be automatically removed due to being ranked in the bottom half in the 3 immediately preceding exercises:

Out of the 5 issues which were ranked in the bottom half in 3 consecutive exercises, the RCP unanimously agreed to retain Issue 21: **Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant**, and Issue 31: **Redeeming the full amount of an MP's Banker's Guarantee (BGs) upon default**. Consequentially, the following three issues are to be automatically removed:

- Issue 23: **Review of provisions on suspension and termination orders.**
- Issue 24: **Review of the timeline for suspension hearing**
- Issue 29: **Improvement of real-time information flow regarding unplanned outages and return to service**

Annex 1: RCP Work Plan finalised at the 133rd RCP Meeting on 23 March 2023

No.	Issue Title	Status (After the 138th RCP Meeting in November 2023)
		Issues from the Rule Change Work Plan 2023
1	Imposition of Minimum Net Tangible Asset as a Condition of Participation for Retailers	**Removed** At its 137th meeting, the RCP supported removing this proposal from the work plan owing to overlaps with the initiatives in the EMA's final determination paper on "Enhancements to the Regulatory Regime for Electricity Retailers".
2	Holistic review of the current prudential requirement obligations and its enforcement process under the market rules	**In-Progress** EMC has explored potential changes to the current prudential requirements to enhance the financial integrity of the Wholesale Market to withstand market volatility and to strengthen the resiliency of all retailers. The concept paper has been discussed at the 137th meeting, where four proposals were presented for RCP's discussion. (1) Proposal 1: Shortening of the Settlement Cycle (By streamlining of processes within the Settlement Cycle) (2) Proposal 2: Adjustment of Average Daily Exposure Calculation (3) Proposal 3: Reconfiguration of Credit Support (To consider insurance bonds and mandating a mix of credit support instruments) (4) Proposal 4: Residual Default Risk Insurance (Guarding against potential default levy). The Panel has tasked EMC to prioritize Proposals 1 and 3 and defer the consideration of Proposals 2 and 4 until the EMA completes work on the "Enhancements to the Regulatory Regime for Electricity Retailers".
3	Participation of BESS in energy and ancillary services markets	**In-Progress** This proposal is a continuation of the "Provision/clearing of ancillary services without active power generation" paper. Following developments in the participation of Battery Energy Storage Systems ("BESS") in the market, for this workstream EMC is now looking into a proposal to enhance the modelling of Battery Energy Storage System to better represent its physical characteristics in the market clearing process. The RCP has discussed this proposal's concept paper at its 133rd meeting and requested further study to be carried out to assess the feasibility of incorporation of State-of-Charge into market clearing. EMC is studying the issue together with the Technical Working Group and will report back to the RCP when the study is completed.

No.	Issue Title	Status (After the 138th RCP Meeting in November 2023)
4	Holistic review of the Market Rules related to cessation of business, liquidation, and insolvency	**In-Progress** This proposal is a review of the rules to clarify the powers EMC and MSCP have under applicable legislations against an MP that has become insolvent. At the 138th RCP meeting, the RCP discussed EMC's proposal on an automatic suspension framework to allow the timely suspension of market participants who had incurred insolvency-related events of default, preventing them from accumulating excessive exposure in the market. The RCP supported this proposal and had tasked EMC to draft the relevant rule modifications to effect said proposal.
5	Review of Scope and Framework for compensation arising from complying with PSO issued overriding dispatch instructions[1]	**In-Progress** This proposal involves a review of the scope and framework for compensation. At the 130th and 131st RCP meetings, the RCP discussed the proposal regarding "Price Revision when Unanticipated Load Shedding Occurs and when PSO Issues Overriding Instructions", which involved discussing a) the suggestions of price revision, particularly for periods when there is real time power interruption, and when the PSO issues overriding instructions; and b) compensation framework for generators that are adversely affected under such scenarios. The Panel has agreed to review both issue a) and b) together.
6	Facilitating Integration of Large-Scale Imports into the Market	**Not Started**
7	Review of rules governing participation and offers for batteries and distributed energy resources	**Not Started**
8	Review of obligation to act within 5 minutes when an action is to be taken "promptly" or "immediately"	**Not Started**
9	Exemption from Gate Closure Rules for cancelled synchronisation	**Not Started**

No.	Issue Title	Status (After the 138th RCP Meeting in November 2023)
10	Request for EMC to Publish Filtered Reserve and Regulation Supply Curves	**Completed** This paper assesses the proposal for EMC to publish filtered reserve and regulation offer curves based on facility's actual capability to provide such services. The RCP discussed the paper at the 135th RCP meeting and concluded that there is no compelling reason to filter reserve and regulation offers.
11	Review of the definition of forced outages in gate closure exemptions	**Not Started**
	Other Work Plan Issues	
12	Review of Regulation Effectiveness Factor or similar compensation scheme to reward greater responsiveness of facilities for regulation	**Not Started**
13	Alignment of performance standards of Interruptible Load scheme and Spinning Reserves	**Not Started**
14	Methodology to calculate Vesting Contract Reference Price (VCRP)	**Not Started**
15	Review of gate closure exemptions following a forced outage	**Not Started**
16	Provisions regarding settlement bank and settlement account	**Not Started**
17	Amendments to the StartGeneration used in the real-time schedule (RTS), and the first dispatch period of the short-term schedule (STS) and pre-dispatch schedule (PDS)	**Not Started**

No.	Issue Title	Status (After the 138th RCP Meeting in November 2023)
18	Review of Automatic Financial Penalty Scheme (AFPS)	**Not Started**
19	Additional Market Re-run for Meter Data Error discovered between First and Second Nominated Day	**Not Started**
20	Modelling of on-site ambient temperature into the MCE such that GTs/CCPs' maximum capacity are adjusted dynamically	**Not Started**
21	Introduction of SWIFT as a form of Bank Guarantee	**Not Started**
22	Review of Expected Net Exposure formula and application	**Not Started**
23	Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant	**Not Started**
24	To review the requirement for registration as commissioning generation facility for generation settlement facilities, except for intermittent generation facilities of aggregate name-plate rating 10MW or more	**Not Started**
25	Review of provisions on suspension and termination orders	**Not Started**
26	Review of the timeline for suspension hearing	**Not Started**

No.	Issue Title	Status (After the 138th RCP Meeting in November 2023)
27	Proposed change in frequency of Pre-dispatch schedule	**Not Started**
28	Improvement of the prepayment process	**Not Started**
29	Adjustment for regulation charges and price neutralisation after final settlement	**Not Started**
30	Removal of Second Settlement Rerun	**Not Started**
31	Improvement of real-time information flow regarding unplanned outages and return to service	**Not Started**
32	Load forecasting and MCE dispatch and price determination when contracted Fast Start unit(s) is performing monthly test or when actual activation	**Not Started**
33	Redeeming the full amount of an MP's Banker's Guarantees (BGs) upon default	**Not Started**
34	To require an MP submitting a request for cancellation of facility registration to also state the intended effective date of cancellation	**Not Started**

Annex 2: Issues for Consultation and Stakeholders' Comments

Existing Issues

1. Holistic review of the current prudential requirement obligations and its enforcement process under the market rules

Issue description

This issue suggests a review of the existing prudential requirements to mitigate the risk and reduce the financial impact to non-defaulting MPs in the event of default. At the 137th RCP meeting, the RCP supported EMC's proposal to structure this issue into 4 sub-proposals as follows:

a) Proposal 1: Shortening of the Settlement Cycle

Where processes within the current 20-day settlement cycle can be streamlined, there will be a reduction of credit support requirements owing to lower exposure for MPs.

b) Proposal 2: Adjustment of the Average Daily Exposure Calculation

The Average Daily Exposure (ADE) is a 90-day rolling simple average of an MP's net settlement amounts. The ADE being a simple average may not fully capture recent price spikes. Adjustments to the ADE formula, which can include adjustments to the calculation period or method, will be explored.

c) Proposal 3: Reconfiguration of Credit Support

It is proposed to review the current allowed forms of credit support, including whether to consider insurance bonds that could free up cash or credit lines for the MP, and whether MPs should be mandated to provide credit support consisting of each instrument (for e.g., to provide a set proportion in cash, a set proportion as a Banker's Guarantee, etc).

d) Proposal 4: Residual Default Risk Insurance

It is proposed to explore implementing a tail-end risk insurance scheme as an additional layer of safeguards before EMC will have to impose a default levy on non-defaulting MPs. Such insurance may be funded by annual premiums collected by all MPs.

Status

In-progress – no rating required. The Panel has tasked EMC to prioritise Proposals 1 and 3 and defer the consideration of Proposals 2 and 4 until there is more clarity on the execution and ramifications of the EMA's Final Determination on the Enhancement to the Regulatory Regime for Retailers.

2. Provision/clearing of ancillary services without active power generation

Issue description

This proposal is a continuation of the "Provision/clearing of ancillary services without active power generation" proposal. Following developments in the participation of Battery Energy Storage Systems ("BESS") in the market, for this workstream EMC is now looking into a proposal to enhance the modelling of Battery Energy Storage System to better represent its physical characteristics in the market clearing process.

This includes reviewing the feasibility and merits to modelling a BESS' state-of-charge in the market clearing engine.

Status

In-progress – no rating required. The RCP has discussed this proposal's concept paper at its 133rd meeting and requested further study to be carried out to assess the feasibility of incorporation of State-of-Charge into market clearing. EMC is studying the issue together with the Technical Working Group and will report back to the RCP when the study is completed.

3. Holistic review of the Market Rules related to cessation of business, liquidation and insolvency

Issue description

This proposal is a continuation of RC367: Review of Allowable Remedies for Events of Default. This proposal calls for a review of the rules to clarify the powers EMC and MSCP have under applicable

legislations against an MP that has become insolvent. This includes a review of current processes regarding events of default, namely:

a) To clarify the course of action when multiple events of default happen concurrently

b) To clarify whether post-commencement debts can be collected or whether EMC and other creditors would have to file a Proof of Debt with the liquidator

c) To specify the applicant for a leave of court in cases of default involving insolvency, such that the applicant can make its case in a suspension hearing.

d) To allow direct termination orders for MPs under dissolution or winding up.

e) To allow automatic suspension orders for MPs ceasing or intending to cease their business operations.

f) To stipulate an automatic suspension process when a suspension hearing is not required

g) To align the responsibilities of a suspended retailer in the market rules vis-a-vis the Retailer Code of Conduct.

This proposal would help ensure the market rules are aligned with applicable legislations in default events involving insolvent MPs.

Status

In-progress – no rating required. At the 138th RCP meeting, the RCP discussed EMC's proposal on No. Issue Title Status (After the 138th RCP Meeting in November 2023) an automatic suspension framework to allow the timely suspension of market participants who had incurred insolvency-related events of default, preventing them from accumulating excessive exposure in the market. The RCP supported this proposal and had tasked EMC to draft the relevant rule modifications to effect said proposal.

4. Review of Scope and Framework for Compensation Arising from Complying with PSO Issued Overriding Dispatch Instructions

Issue description

The NEMS is an "energy-only" wholesale electricity market, where the only source of remuneration for generators is the revenue from the sale of electricity and provision of ancillary services. Price signals serve to encourage market participants to operate their assets and undertake new investment efficiently.

a) It is proposed that the wholesale market price be revised to the market price cap of $4,500/MWh ex-post to reflect the scarcity of capacity in real time power interruption event in order not to undermine the investment signals in an energy-only wholesale electricity market.

When PSO overrides dispatch instructions generated by the MCE, the market prices may remain artificially suppressed leading to distorted price signals and affecting the ability of a well-functioning energy-only market to convey price signals to MPs that encourage them to operate their assets and undertake new investments efficiently.

It is proposed that when PSO overrides dispatch instructions in real-time, a MCE rerun be conducted ex-post to produce a market price which reflects the PSO's dispatch instructions. For instance, if the PSO instructs a peaking plant to generate even though it was not scheduled by the MCE, the prices in that period should be revised to reflect that such a peaking plant was running.

The previous proposal on compensation sought to review the framework for compensation, in particular with regards to Section 5.6.2 of Chapter 5 of the Market Rules, and proposed a framework to determine compensation claim amounts, as a pre-determined methodology for compensation would reduce uncertainty and administrative burden for MPs. It also proposed to expand the scope of compensation to include abnormal events in the PSO controlled system that can affect the output of any GRF.

Status

In progress – no rating required. The RCP agreed in principle to resolve the issues of compensation and price revision together, due to the interlinked nature between the two issues. The issue is on hold, noting that EMA had expressed a preference to manage the compensation methodology internally.

5. Facilitating Integration of Large-Scale Imports into the Market

Issue description

One significant avenue to realise Singapore's net-zero aspirations is to have imports of low-carbon electricity from other countries. Market changes are required to facilitate the integration of such large-scale imports into the market.

a) Enable Imports Registered Facilities (IRFs) to participate in Reserves and Regulation

Presently, IRFs do not provide reserve/reserve payment and regulation services. For parity with local generators, IRFs should be able to participate in these product markets.

b) Settlement framework for electricity imports

Energy via the existing interconnector with Malaysia is based on "pay-as-scheduled". In future, imports should be "pay-as-metered", as announced by EMA.

c) Enable multiple importers to use a single interconnection

For shared interconnections, a "single aggregator" approach by default is preferred, where settlement, cost allocation and reserve requirements are to be settled by one aggregator across the shared interconnection. Currently, there is no such "single aggregator" entity in the Market Rules. Also, a fallback approach is required if settlement with the default "single aggregator" fails (e.g., how then should costs be equitably distributed to each importer).

Status

In progress – no rating required. EMC is working with EMA to further identify the scope of the rule changes required to be made to facilitate the import projects at various stages, and to prioritise each item accordingly.

6. Review of rules governing participation and offers for batteries and distributed energy resources

Issue description

With the imminent increase in the participation of resources such as batteries and distributed energy resources (e.g., virtual power plants), this proposal calls for a review of relevant rules governing their participation to better respect the characteristics of these facilities.

a) **Introduction of a new facility category for batteries**

Batteries have a two-way energy flow, differentiating it from most existing generation and load facilities. They are most closely tied to the GRF classification, which caters mostly for generating units exporting energy to the grid, and the embedded generator classification may not be suitable due to the minimal auxiliary load consumption of batteries. A new category catering to facilities like batteries could smoothen the registration processes for such facilities.

b) **Review of gate closure provisions for batteries**

Batteries' generation capacity can vary more quickly, tied to factors such as their state-of-charge. The current 65 minute gate closure provisions can hence be restrictive for batteries. A review of these provisions would allow batteries to better reflect real-time operational conditions through their offers.

c) Allowing the provision of regulation at the low-tension level from facilities such as the virtual power plant

As the grid becomes increasingly decentralized, market participation at low tension (LT) should be explored. This will expand and diversify the source of regulation/reserve services from which PSO/EMC can procure.

Status

In progress – EMC has conducted internal studies on how existing participation models for generation facilities can be enhanced to adapt to various business models of various distributed energy resources.

7. Review of obligation to act within 5 minutes when an action is to be taken "promptly" or "immediately"

Issue description

Under the current Market Rules in section 1.2.5 of Chapter 5, wherever the Chapter specifies that an action is to be taken “promptly” or “immediately”, actions shall be taken within 5 minutes. It has been raised with the MAU/MSCP that 5 minutes is unreasonable and insufficient for a genco to update the corrected status of the facility (e.g., when there is a trip). More time is usually required to investigate the technical issues encountered.

This was raised during two cases of non-compliance with PSO’s directions that MAU investigated. The facilities encountered a technical issue and were unable to comply with the directions from PSO. To confirm if the facility will still be able to follow the instructions as directed, despite the technical issue, the maintenance team was required to be at the scene to check. 5 minutes was not sufficient to confirm the technical issue, try to fix the incident and attempt to start up to comply with PSO directions.

It is proposed to review the obligation to act within 5 minutes when an action is to be taken “promptly” or “immediately”.

The MAU/MSCP notes the urgency for PSO to be notified, so that there is sufficient time to alleviate situations of contingency shortfall, high-risk operating state and/or emergency operating state. Therefore, this timing is proposed to be revised and evaluated in consultation with the PSO, such that it allows gencos to “promptly” resolve technical issues, while providing the PSO sufficient time to direct alternative generation facilities to alleviate tight supply conditions.

Comments on Issue Description, Scope, etc

- Agreed that 5 minutes isn't sufficient for the technical team to assess unit fault(s).
- Perhaps an extension beyond 5 mins will allow more MPs to comply within the time limit?
- Not applicable to EGs

8. Exemption from Gate Closure Rules for cancelled synchronisation

Issue description

We would propose to include two new gate closure exemption rules under Section 10.4.1.1 of the Market Rules (i) to account for cancellations / delays of synchronisation arising from an unanticipated technical fault/issue, and (ii) to bring forward the synchronisation where the technical fault/issue is resolved earlier than expected.

Under the existing Market Rules, a GRF will be exempted from the gate closure rules if it fails to synchronise. However, there might be instances whereby prior to synchronisation, a facility may be required to:

1. Cancel the synchronisation due to an unanticipated technical fault;
2. Delay the synchronisation for investigation of new issues which have arisen i.e., an alarm is triggered; and
3. Bring forward the synchronisation as the technical fault/issue is resolved.

The gate closure exemptions should be extended to account for the above.

Comments on Issue Description, Scope, etc

- Agree that operational constraints appear on short notice, especially during run-ups or shut-downs. More gate closure exemptions will allow such affected units to better reflect their true capability in the market.
- This will make it easier to manage operational constraint.

9. Review of the definition of forced outages in gate closure exemptions

Issue description

Section 10.4.1.1b of Chapter 6 of the Market Rules indicates that offer variations after gate closure shall be submitted where it is intended for a generation registered facility to reflect its revised capability for the three consecutive dispatch periods immediately following a forced outage or its failure to synchronise.

Section 1.1.113 of Chapter 8 defines a forced outage to be: an unanticipated intentional or automatic removal from service, temporary de-rating, restriction of use or reduction in performance of equipment.

The definition of forced outage in the market rules only prescribes for the conditions that constitute a forced outage effect. It is regardless of the intent – whether it is due to a technical failure of the plant, or due to a mistaken human intervention. The definition of forced outages should be reviewed to address this ambiguity.

Comments on Issue Description, Scope, etc

- Agree to reduce the ambiguity in the definition. At times, forced outages cannot be determined from the first alarm that was initiated. It requires lead time for the technical personnel to check, and confirm if the alarm will lead to an eventual inability to continue operation / sync.
- I think it is probably good for the market to know what is the reason behind forced outages.
- However, as more technologies emerged, it might be challenging for MAU to define exactly the definition of forced outages as different plants would have different considerations/constraints. May faced more proposals from different companies for the review of gate closure exemptions if the definition of forced outages are not general enough to cover all plants' setup.
- This will make it easier to manage operational constraints.
- Whether technical failure or mistaken human intervention, it would still be a forced outage.

10. Review of Regulation Effectiveness Factor or similar compensation scheme to reward greater responsiveness of facilities for Regulation.

Issue description

This proposal calls for the addition of a compensation scheme for Fast Regulation. This can be done via a review of Regulation Effectiveness Factor consultation paper. Alternatively, a premium can be paid on top of Regulation price when a facility provides Regulation at a distinctively higher rate compared to conventional generation facilities, e.g., Reg D vs Reg A in PJM, or if the facility can ramp up to the desired power output level within a specific timeframe (e.g., 10 seconds).

As intermittent renewable energy sources are progressively integrated into the electricity grid, the grid is increasingly susceptible to high frequency fluctuations and instability. As such, the grid will benefit from generating units with faster response time. Generation/Regulation facilities should be rewarded based on the response speed to reflect the energy and cost efficiencies as a result of a faster response rate and stabilisation of grid frequency. This will improve commercial feasibility of facilities such as Energy Storage Systems (ESS) in providing Regulation services.

Comments on Issue Description, Scope, etc

- With BESS, this becomes more relevant.
- The current Regulation Price cap is the result of a direction by EMA in 2009. EMA should first be consulted on this.
- Other than reviewing the regulation effectiveness factor for generator, the same should be applied to ESS as well. There is an urgency to implement this as ESS is already in operation and more such facilities maybe required to support more renewable sources in our power system.

11. Alignment of performance standards of Interruptible Load scheme and Spinning Reserves

Issue description

Given ILs' ability to directly compete with generators in the Contingency Reserve market, ILs should be held to a similar performance standard as spinning reserves, where activation should be met by load shedding within 10 minutes and held for 30 minutes instead of the current process of an unstipulated period of interruption (where restoration of interrupted load can only occur upon receipt of PSO's clearance message).

Having a more defined load interruption window will provide more certainty and lower the barrier to entry for more loads that wish to participate in the IL scheme, since many interested load facilities may not be designed for long-term interruption.

Aligning the performance standards should also consider a penalty system where IL providers are penalized for the full/partial non-performance based on counterfactual reserve prices if such non-performance was removed from the market clearing run, since ILs are not allocated any reserve costs.

This change will hence allow ILs to remove or reduce reserve offers outside of gate closure to reflect their true capability to provide reserves for an extended period of time, creating an IL scheme that is more congruent with incentivizing load participation as a supplementary source of reserves to NEMS.

Comments on Issue Description, Scope, etc

- I think this scheme to make IL load curtailment timings more fixed and defined is a good cause. It allows more flexibility for both LRF and aggregators. Some assets within the premise may only perform IL for shorter periods of time, but that should not discourage or ostracize any building

owners from wanting to part-take in this national event. We need to find a want to be more inclusive and that may be a good take.

12. Methodology to calculate Vesting Contract Reference Price (VCRP)

Issue description

As new forms of generation technology enter Singapore, GRFs such as Power Import and Battery Energy Storage Systems (BESS) will be registered to existing Market Participants' settlement accounts. Current Market Rules define VCRP as the weighted average of MEP over all GRFs and GSFs (with positive IEQ) associated with the same settlement account. This means that MEP of GRFs such as Power Import and BESS will affect VCRP.

Fundamentally, these GRFs do not consume Vesting LNG to fulfil Vesting Contract. Hence, VCRP should be calculated as weighted average of MEP over all GRFs that were involved in the Vesting Contract allocation process only.

Comments on Issue Description, Scope, etc

- Differences should be minimal.
- This is a valid point. Vesting price was intended to take reference from vesting LNG prices, but if you have other sources of GRP which are either a non-direct resultant of LNG prices or using completely different fuels; They should not be included in the weighted calculations. And until they become a significant portion of our energy mix, I think their input can be a small correlation factor

13. Review of gate closure exemptions following a forced outage

Issue description

Shell Eastern Petroleum is a process site. GRFs are process driven. During a trip, operations will need to focus on stabilizing the process unit before proceeding to perform the forced gate closure. This will allow more time for operations to react to the site situation. It is proposed to revisit gate closure exemptions, which is to revise the number of consecutive dispatch periods exempted from gate closure from three to five.

Comments on Issue Description, Scope, etc

- At times when alarms occur very close the end of a period, it leaves Gencos with much lesser reaction time to update their offers. Certain provisions should be made for such cases (I.E., if an alarm gets activated at P48, 2359hrs, it should be counted as it got activated in P1 (0000hrs - 0030hrs))
- To help process operational constraint(s).
- There should not be differentiated gate closure rules and penalties governing EG and GRFs, given that both types of facility have the same revenue treatment. Therefore, any relaxation of gate closure rule for EGs should also be given to GRFs.

14. Provisions regarding settlement bank and settlement account

Issue description

(a) Introduction of settlement account flexibility and settlement bank diversification

MPs are currently restricted to one bank account for settlement purposes with the settlement bank (i.e. OCBC).

This proposal is intended to improve options available to MPs and also diversify settlements to flow through more than one financial institution. This can be performed by (a) introducing multiple settlement banks, and (b) allowing a MP to nominate which account is to be used for the settlement of the designated service(s) and/or (c) introducing a GIRO arrangement for settlement.

This will provide greater flexibility to MPs and also improve the ability of the market to sustain operations in the situation if the settlement bank were to become unstable.

(b) Allowing MPs without embedded generators to have multiple settlement accounts

At the 82nd RCP Meeting, when the Panel was discussing RC333 (*Rectification of Settlement Formula for Net Participant Settlement Credit*), Mr. Dallon Kay noted that MPs without embedded generators

(EGs) are allowed to have only 1 settlement account. He requested allowing MPs without EGs to also be able to have multiple settlement accounts, for greater flexibility.

Comments on Issue Description, Scope, etc

- Agree with the proposal because currently OCBC bank is not necessarily part of the wider network of banks used by all companies.

15. Amendments to the StartGeneration used in the real-time schedule (RTS), and the first dispatch period of the short-term schedule (STS) and pre-dispatch schedule (PDS)

Issue description

Proposal 1: StartGeneration for RTS and the first dispatch period of STS

Appendix 6D section D.12.1 of the market rules currently stipulates that the StartGeneration value for each GRF to be used in the RTS or the first dispatch period of the STS shall be:

a) the value received from the PSO,

b) if a) is unavailable, the scheduled generation levels in the RTS for the dispatch period when the calculation commences, or

c) if the RTS in b) is unavailable, zero.

Using zero as StartGeneration will result in all regulation providers being ineligible for regulation provision and could therefore lead to a dispatch schedule with no regulation procurement in the market.

It is proposed that the StartGeneration value used in RTS (e.g., RTS P5) be:

a) the value received from the PSO,

b) if a) is unavailable, the scheduled generation levels in the RTS for the dispatch period when the calculation commences (e.g., RTS P4), or

c) if the RTS in b) is unavailable, the scheduled generation levels, in the most recently released STS normal load scenario, for the dispatch period immediately preceding the dispatch period that the RTS is for (e.g., STS containing P4).

It is proposed that the StartGeneration value used in the first period of the STS (e.g., STS P5) be:

a) the scheduled generation levels in the RTS for the dispatch period immediately after the dispatch period when the calculation commences (e.g., RTS P4), or

b) if the RTS in a) is unavailable, the scheduled generation levels, in the most recently released STS with a load scenario corresponding to the STS scenario being calculated, for the dispatch period immediately preceding the first dispatch period required in the calculation of the STS (e.g., STS containing P4).

This proposal is expected to provide a more feasible dispatch schedule in the case when the values from the PSO and RTS in the preceding period are not available as the StartGeneration.

Proposal 2: StartGeneration for the first dispatch period in PDS

Appendix 6D section D.12.2 of the market rules stipulates that the StartGeneration value for each GRF for the first dispatch period of the PDS shall be scheduled generation level in the RTS current at the time (or the RTS immediately preceding the current time) when calculation of the PDS commences.

This leads to two unwanted effects:

1. It creates a dependency of PDS on RTS. In the recent NEMS downtime on 2 October 2018 which lasted about one hour, two RTS (P27 and P28) were affected and failed to be produced. After the system was up and PDS P33 was triggered to run, PDS P33 failed due to the unavailability of RTS P27 and 28.

2. Calculation of additional 4 leading periods which are not published to the market. When calculation of the PDS commences, there is a 4-period gap between the most recent RTS and first dispatch period covered by the PDS. For example, PDS P33, which forecasts from P33 today to P48 tomorrow, requires the projected scheduled generation levels in P32 as its StartGeneration level. At 13:45 when calculation of PDS P33 starts, the available RTS is P28. In order to get the projected scheduled generation levels for P32, the MCE calculates 4 additional periods (P29-P32) which are not published to the market. Since there are projected scheduled generation levels for these 4

additional periods in the STS, recalculating the leading periods take up system resources with little benefit (other than to take into account offer changes for P32 which may be made between the time the STS is calculated and the time the PDS is calculated, usually 20 mins.).

The StartGeneration value for the first dispatch period of the PDS is proposed to be the scheduled generation levels in the most recently released STS normal load scenario, for the dispatch period immediately preceding the first dispatch period required in the calculation of the PDS.

This proposal removes the dependency of PDS on RTS and enhances the robustness of PDS for MPs and the PSO. It also eliminates the need to calculate additional periods in PDS and makes it more efficient. Although this is replaced with a dependency on STS, there are more STSs for a given dispatch period in question, which reduces the chance of PDS failing to be produced.

Comments on Issue Description, Scope, etc

- It is a long topic, but I'll be happy to know more in operational specifics.
- Supportive of the idea that if data is not received by PSO, LAR is to be used. DAR should be used next and 0 should not be used.
- What is the frequency of occurrence that there is no value received from PSO and the scheduled generation levels in the RTS is unavailable?

16. Review of Automatic Financial Penalty Scheme (AFPS)

Issue description

Waste-to-Energy Plants GRF comprises two steam turbo generators. Due to the plant design, the two steam turbo generators have to be registered as a single GRF. The tripping of a turbo generator is only considered as a partial forced outage, and thus do not exempt the GRF from the AFPS. Tuas South Incineration Plant thus suggests for the forced outage of one of its turbo generators to also be considered as a full outage of the GRF.

Comments on Issue Description, Scope, etc

- Generators are process driven and are sensitive to process trips.

17. Additional Market Re-run for Meter Data Error discovered between First and Second Nominated Day

Issue description

It is proposed to have an additional re-run on T + 120 business days so that meter errors discovered can be settled more efficiently.

Currently, the MSSL submits corrected meter data for metering errors to EMC following the timeline below.

***Metering* errors discovered up to:**	**Deadline for submission of corrected *metering data* to *EMC*:**
T+9 *business days*	On T+9 *business days*, 5:00pm
First nominated day	After T+9 *business days*, 5:00pm and no later than T+47 *business days*, 5:00pm
Second nominated day	After T+47 *business days*, 5:00pm and no later than T+252 *business days*, 5:00pm

Under the current process, the second re-run is supposed to cater for the very rare case of meter error adjustment. However, we observe an increasing number of metering adjustments discovered after first re-run and thus can only be settled after the second re-run has been done. The cash flow impact of these metering errors falls on retailers and consumers, both of whom have no control over the errors.

As such, it is proposed to have an additional re-run on T + 120 business days so that the majority of meter errors discovered can be settled more efficiently.

Comments on Issue Description, Scope, etc

- Alternate proposal will be to bring forward the 2nd rerun.
- Please consider merging with issue 28.

18. Modelling of on-site ambient temperature into the MCE such that GTs/CCPs' maximum capacity are adjusted dynamically

Issue description

A GT/CCP's maximum capacity falls as on-site ambient temperature increases. This issue looks at modelling this linkage between the GT/CCP's maximum capacity and ambient temperature into the MCE, such that their maximum capacities can be adjusted dynamically by the MCE for the purpose of scheduling energy, reserve and regulation.

Table: Ambient Temperature Historical Extremes (source: NEA website)

	Highest Daily Max Temp (Deg C)	Date	Est. Loss of CCP Registered Capa
Annual	37.0	17/4/1983	356
Jan	35.4	26/1/2020	249
Feb	36.0	23/2/2005	289
Mar	36.6	4/3/2010	329
Apr	37.0	17/4/1983	356
May	36.5	3/5/2016	323
Jun	36.2	10/6/2014	303
Jul	36.0	3/7/2016	289
Aug	35.4	9/8/2020	249
Sep	36.8	30/9/2016	343
Oct	35.7	13/10/2019	269
Nov	35.8	18/11/2019	276
Dec	35.9	6/12/2016	283

On a monthly basis, the highest daily maximum ambient temperature was registered in the last 5 years from 2016 to 2020. It will result in the estimated loss of CCP capacity which can range from 249 to 356MW, equivalent to one CCP not available under high ambient temperature because combustion turbines have power output that is inversely proportional to their inlet air temperature. As climate change is a real concern, it is important to the reliability of the PSO-controlled system that there is better recognition of weather capability in operations.

PSO has real-time ambient temperature from the Gencos for each CCP and PSO is already sending the real-time ambient temperature data of each CCP to the EMC. This rule change should be prioritised as contribution of electricity generations from CCPs has increased to above 95%. MCE should schedule generation facilities based on their effective capacity and not a fixed registered capacity which the generation facility cannot attain under high ambient temperature. This will have impact on system security. Noted that no additional testing is required from the generators as the ambient temperature effect on CCP's rated capacity can be referenced against the generation output vs temperature curve.

Comments on Issue Description, Scope, etc

- Rule obligation on MPs not to deviate from its energy schedule would mitigate such issues.

19. Introduction of SWIFT as a form of Bank Guarantee

Issue description

This proposal calls for SWIFT to be allowed as a form of a banker's guarantee (BG) for an MP's credit support provision.

The current process of raising or amending a BG takes more time and effort than it should. After the BG is raised by a bank, the Market Participant (MP) will require a minimum of 3 – 5 days for it to take effect. MPs will also have to give EMC advance notice for the collection of the physical copy of the BG at EMC's premises.

Streamlining this process with the introduction of SWIFT as a form of BG will greatly reduce administrative efforts for all parties involved. EMC will be able to receive the new BG electronically on the same day, and no physical copy will be required.

Removing the need to receive a physical copy of the BG will not only be in line with Covid '19 best practices, but it will also be environmentally friendly. It could enable the market to be nimbler should sudden changes in BG requirements arise.

Comments on Issue Description, Scope, etc

- I think introducing SWIFT allows greater pledging of guarantee values but may incur more risks. But the notion is worth exploring

20. Review of Expected Net Exposure formula and application

Issue description

a) Review of risk assessment for MPs who are exiting the market

Current ENE calculation is indifferent for all MPs regardless of status and in this case, a MP who is exiting the market, its risk assessment would be magnified. This is due to the general application of "(20-X)*ADE" for the unknown trades component.

To more accurately reflect the above stated scenario for a MP who is exiting the market, it is proposed to apply a different risk assessment approach on this group of MPs, i.e., "Current Exposure + Y × (Estimated Average Daily Exposure) + Amount overdue – Prepayment Amount", where Y is the number of remaining active days before its exit.

b) Make clear the EMC's obligation to notify the MP of their risk exposure levels

According to the Market Rules Chapter 2, Section 7.2, the EMC is to determine a MP's current exposure and ENE on each business day. However, it is unclear on the EMC's obligation to notify the MP if its ENE is zero or negative.

By eliminating the need to notify the MPs in the following scenarios, it would align the processes and efficiency would be gained.

1) MPs with zero or negative ENE

2) MPs that are suspended. For the above MPs, the risk assessment is often misrepresented. For this group of MPs, it is often that its credit support would be used to offset its daily payment. Hence, the risk exposure levels would eventually hit 70% and a margin call would be issued. However, for a MP that is suspended the margin call would be redundant.

Comments on Issue Description, Scope, etc

- It is critical to assess the exposure properly so as not to exert undue burden on exiting MPs.

21. Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant

Issue description

Overview:

• For metering adjustments of the defaulting market participants, EMC to perform a one-time levy/credit of these monies to each non-defaulting market participant.

• The market rules under Change 2, section 9.8.1 and 9.8.2, application of the Market Rules creates operational problems or is otherwise inefficient or impractical, MSCP advised EMC to submit a proposal to amend the Market Rules.

Item 1: To exclude metering adjustments for the amount paid by EMC to the non-defaulting market participants and any other monies owing to the market.

"Where the non-defaulting market participant is, at the relevant time, still a market participant, any such amount shall be paid by the EMC to that non defaulting market participant within two business days of the date on which the EMC receives the recovered amount pursuant to section 9.8.1." under Chapter 2, section 9.81.

Item 2: To include: Any default levy amount arising from defaulting market participant's metering adjustments will be accumulated and net off until the last second settlement re-run of the defaulting market participant's last trade date. EMC will not levy the non-defaulting market participants as per Chapter 2 section 9.6.2

EMC shall issue an invoice to each non-defaulting market participant comprising the amount of that non-defaulting market participant's share of the default levy under Chapter 2, section 9.6.2

For such metering adjustments which take about one year until last second settlement re-run of the last trade date, it is more practical to perform a one-time levy/credit of these monies to each nondefaulting market participant. A credit will be calculated in proportion to the weighted average of the first default levy amount payable by that non-defaulting market participant or a levy amount will be calculated in proportion to the trade value of the non-defaulting market participant for the last trading date. [Reference to Silvercloud's case and comments from MSCP]

Furthermore, these adjustment amounts are typically small and the apportionment to the nondefaulting market participants could be levied or distributed for a fraction of few cents or even lesser. In the interests of the market and the market participants, the most operationally feasible and efficient manner to administer these monies is to withhold such amounts for consolidation and/or set-off any future metering adjustments.

Moreover, MSCP have re-emphasised to EMC that such requests (i.e., consolidation of the metering adjustments) has put the MSCP in an invidious position, as it is asked to make a blanket ruling to ignore some provisions of the Market Rules. If the application of the Market Rules creates operational problems or is otherwise inefficient or impractical, the proper course would be for the EMC to submit a proposal to amend the Market Rules. Therefore, EMC would like to propose the above rule change.

Comments on Issue Description, Scope, etc

- This needs to be addressed for operational practicality as MSCP highlighted in the SilverCloud case.

22. To review the requirement for registration as commissioning generation facility for generation settlement facilities, except for intermittent generation facilities of aggregate name-plate rating 10MW or more

Issue description

It is proposed that generating units with name plate rating less than 10MW not be required to be registered during the period they are undergoing commissioning tests. As the commissioning activities of smaller units would not compromise system security, the PSO do not need to monitor such units' commissioning activities. Chapter 2 Section 5.3.1.2 is therefore proposed to be amended as follows:

5.3.1 A market participant shall apply to register a commissioning generation facility:

5.3.1.1 …

5.3.1.2 if the facility is required or intended to be registered as a generation settlement facility under section 5.1, and has an aggregate name-plate rating of 10 MW or more ~~is required to cause or permit any physical service to be conveyed into, through or out of the transmission system~~,

on a transitional basis…during the period in which the commissioning generation facility is undergoing the commissioning tests referred to in section 5.3.4.

This would streamline the registration process and requirements.

Comments on Issue Description, Scope, etc

- To keep for future provision.
- To streamline the registration process and requirements. It will reduce time and effort for MPs.

23. Review of provisions on suspension and termination orders

Issue description

Recent experiences showed that the rules could benefit from better clarity on the processes for the issuance of suspension and termination orders.

a) To specify the applicant to lift/modify a suspension order made by the MSCP

The current Market Rules allow the MSCP to lift/modify a suspension order, but it can only lift a suspension order and/or act to make modifications to such order after it receives an application to do so.

The rules do not specify which party has standing to make such an application, and this proposal calls for the clarification of who said party should be.

b) To clarify the process for the application for a termination order

The termination order process is currently based/dependant on the resolution/remedy of the event of default that led to the suspension order of the MP. The process shall also contemplate other potential impacts on the market that should be considered and promptly raised by the operational side of EMC or by the PSO based on market risk related to the security, sustainability of the electricity supply. Without such a process in place, the MSCP is unable to proceed with termination proceedings on its own motion when it comes to operational risk, financial risk and even to security and sustainability of electricity supply.

More clarity on a procedure for the issuance of the termination order would help formalise the MSCP's course of actions and help provide more clarity to suspended MPs on the status of their suspension.

Comments on Issue Description, Scope, etc

- A thorough review of the rules can be done to assess the existing clarity of the rules on these.
- To keep for future provision
- Consultation with EMA should be conducted first as to whether to expand the jurisdiction of the MSCP with respect to the application of termination orders.

24. Review of the timeline for suspension hearing

Issue description

Currently, the Market Rules require the MSCP to conduct and conclude a suspension hearing within four business days. The four business days timing is not sufficient for MPs to call expert witnesses to provide evidence. As evident from past cases, none of the MPs had sought to call expert witnesses before the MSCP.

This proposal calls for a review of the duration of the suspension hearing. It is undesirable to rush through a suspension hearing in four business days as this may not provide justice to MPs that may want to call witnesses and make detailed submissions before the hearing.

Comments on Issue Description, Scope, etc

- 4 business days seems unrealistic.

25. Proposed change in frequency of Pre-dispatch Schedule

Issue description

It is proposed that the frequency with which the Pre-dispatch Schedule (PDS, also known as the Day Ahead Run or DAR) is produced be increased from every 2-hour interval to 1-hour interval.

At present, the PDS includes the forecast for the next day after 10am each day and refreshes every 2 hours.

It is also noted that in the context of the Directed SLF Scheme, currently, market participants are required to submit day-ahead offers by the 6pm DAR run to adhere to EMA's standing direction-A. With the 120-minute interval allowing only four DAR runs (e.g., at 10am, 12pm, 2pm, and 4pm), Gencos face constraints in structuring and finalizing their offers before the crucial 6pm DAR run. Increasing the number of DAR runs provides Market Participants (MPs) with enhanced visibility, ensuring optimal dispatch of generation units, especially in the face of greater intermittent generation, such as renewables.

A higher frequency of DAR runs beyond 6pm offers PSO greater visibility, allowing for a more comprehensive assessment and determination of appropriate regulatory interventions. This becomes

crucial to avoid instances of over-intervention, as observed when MPs could only submit offers by the 8pm DAR, while PSO had already issued regulatory interventions based on the 6pm DAR. Such scenarios result in market over-intervention. Market over-intervention proves to be ineffective and inefficient in the long run, leading to the wasteful expenditure of taxpayer money.

Under this proposal, the higher frequency run for PDS will facilitate price discovery and allow MPs to react timely to the changes in the short-term market, enabling greater market efficiency.

Comments on Issue Description, Scope, etc

- Higher frequency of DAR runs allows earlier intervention to address any shortfalls if need be. This improves the accuracy of demand forecast as well stemming from intermittent generation.
- To facilitate price discovery, suggest extending the duration of Look Ahead Run or LAR instead.

26. Improvement of the prepayment process

Issue description

For prepayments, simple payments to EMC's clearing account should be allowed (this may include any other bank if GIRO is set up), instead of solely automatic collection from OCBC. The current process requires a lot of manual work for EMC, and is cumbersome for MPs as they need to use forms and log in. Streamlining the prepayment process to enable transfer of monies into the EMC bank account without any other requirements would result in a more friendly way for MPs to make payments.

Comments on Issue Description, Scope, etc

- To include other banks for better flexibility.

27. Adjustment for regulation charges and price neutralisation after final settlement

Issue description

This proposal calls for, via a revision of Appendix 7B Section B.4.2, an adjustment of the allocated regulation price (AFP) and the neutralisation of price differentials (USEPh + HEUCh – MEPh) when there is any meter data adjustment affecting the injection energy quantities (IEQ) and withdrawal price quantity (WPQ).

Currently, when there are any settlement adjustments for metering errors discovered after T+10BDs that is due to generation metering errors (i.e. IEQ), the adjustment is only applied to MEP and PSO/EMC fees, but not the AFP.

Similarly, the neutralisation of price differentials (USEPh + HEUCh – MEPh) is also not adjusted even if there is any corrected WPQ data for an embedded generator.

However, under the central intermediary scheme (CIS) where the MSSL acts as an aggregator and payment intermediary for contestable consumers with intermittent generation source (IGS) capacity of less than 1MWac, the AFP and the neutralisation of price differentials (USEPh + HEUCh – MEPh) are adjusted when there is any corrected metering data affecting the IEQ and WPQ.

The above misalignment between the current market rules and the current practice under CIS would result in an over/under-collection of revenue by the MSSL.

Furthermore, given that the CIS has been extended to include embedded generators up to 10MW (in March 2018), there is a need to change the above market rules to align with the practice of CIS so as to avoid over/under-collection of revenue by the MSSL while maintaining the revenue neutrality of the MSSL when there is any meter data adjustment affecting the IEQ and WPQ.

The proposed rule change will prevent over/under-collection of revenue by the MSSL as a result of the current misalignment in settlement adjustment methodology. This will maintain the revenue neutrality of the MSSL.

28. Removal of Second Settlement Rerun

Issue description

Chapter 2, Section 4.1.5

A person whose registration as a *market participant* expires pursuant to section 4.1.4 shall remain subject to and liable for all of its obligations and liabilities as a *market participant*. This includes a liability under section 9 of this Chapter or a liability in respect of adjustments arising from *metering errors* under Chapter

7, which were incurred or arose under the *market rules*, a *market manual* or the *system operation manual* prior to or on the *trading day* on which such registration so expires regardless of the date on which any claim relating thereto may be made, subject only to any applicable provisions of the Limitation Act (Cap. 163).

Any Market Participant who de-registers from the Singapore Wholesale Electricity Market (SWEM) is deemed liable, and have their credit support held in custody for at least one year from their last registered trading date. This is to facilitate any adjustments arising from metering errors in the second re-run which occur on Trading Day + 253 business day.

The holding period of at least one year creates a lot of administrative inefficiencies on both the Market Participant and EMC. The de-registered Market Participants' credit support would be held in custody for at least one year from their last registered trading date. This holding period affects the cashflow liquidity of the de-registered Market Participants as their cash deposit are tied up for at least a year for the adjustments from metering errors which potentially might not be applicable to the de-registered Market Participant.

More lead time is required to refund the credit support as this require an intensive effort to reach out to the Market Participants to follow up on the NEMS account closure and the return of NEMS tokens. Common issues and challenges faced are missing NEMS tokens or incomplete account closure forms submission resulting to further delay in the refund process.

Comments on Issue Description, Scope, etc

- This will improve the market efficiency substantially - deregistrated MP from market can be removed earlier.
- Please consider merging issue 17 and this issue.

29. Improvement of real-time information flow regarding unplanned outages and return to service

Issue description

This proposal suggests improvements in the reporting of real-time generator availability. This includes the reporting of planned and unplanned outages in each individual half-hour. If a unit trips, the market is currently notified within a reasonable timeframe. However, the market is not notified immediately when that unit has returned in a similar time frame.

For example, a section on the EMC's website could show all units that are unavailable in the current half-hour.

This would help all MPs with spot market exposure in managing their risks more accurately, as well as promote liquidity in the SGX electricity futures market. It would also enhance the forecasting and analytical capability for natural and non-natural players.

Comments on Issue Description, Scope, etc

- I think if contingency reserves can be activated anytime within the bid-ed timespan, then it is important for MPs to know the status of load generation facilities as soon as possibl.
- To improve forecasting.

30. Load forecasting and MCE dispatch and price determination when contracted Fast Start unit(s) is performing monthly test or during actual activation

Issue description

When performing the monthly tests or during actual activation, the fast start units are expected to generate >100 MWh per hour of energy into the system.

The running of the fast start units is an out of market activity; its generation output artificially displaces the system requirement from the other generation facilities. At the moment, it is not clear how the demand forecast, MCE dispatch and price determination will be impacted when the fast start units are dispatched.

We propose an efficient market re-run methodology whenever the fast start units are operated. Depending on how the demand forecast, MCE dispatch and price determination will be impacted, the MCE should re-run as-if generation from the fast start unit was not available to offset the artificial market disturbance.

This will ensure that market integrity and the price formulation process is not disturbed by artificial out-of-market activities. The price formulation process would not be impacted by artificial out-of-market activities.

Comments on Issue Description, Scope, etc

- Fast Start Service was procured for calendar year 2003. When Fast Start Service units were dispatched, there was no change to demand forecast or price determination except that HEUC would be affected as the injection of energy by Fast Start Service units would not be paid based on nodal energy price for which there was none for such units but through the applicable ancillary service contracts for which payments were recovered through MEUC. There already is established practice for treatment of Fast Start Service.

31. Redeeming the full amount of an MP's Banker's Guarantees (BGs) upon default

Issue description

The current BG template only allows EMC to make a claim to the issuing bank for an amount that covers the outstanding obligations due and payable by the MP. However, once an MP defaults on payment for a given day, the MP is unlikely to be able to pay for its invoices due on the subsequent payment dates.

Given daily settlement in the SWEM, if EMC is strictly only allowed to make claim on the BGs for invoices that are due, EMC would need to submit such claims to the issuing bank every day, which creates operational challenges for EMC.

It is proposed that EMC be allowed to claim an MP's BG amount in full once the MP defaults on payment. This will reduce the operational costs and expenses incurred by EMC, and thereby reducing the default levy charged, but may incur additional costs to the MP if an MP provides a BG amount which is more than the amount required to cover its exposure.

Comments on Issue Description, Scope, etc

- By doing such, payment default could be even better mitigated, and to align with Performance Bond regime.
- It may not be appropriate to redeem the full amount of an MP's BG as it makes the assumption that the MP will continue defaulting on its payment. We propose for EMC to claim up to total outstanding amount incurred by the MP, instead of just the amount due for payment.
- "Claiming an amount in excess of default is akin to finding the MP guilty of a future "crime" and would set a dangerous precedent.

32. To require an MP submitting a request for cancellation of facility registration to also state the intended effective date of cancellation

Issue description

This proposal suggests adding the requirement that when a MP wishes to cancel the registration of a registered facility, the MP should also state the date that it wishes for the cancellation to be effective at the same time as such request is filed with the EMC under Chapter 2 section 6.1.1.

This is so that all parties involved (including PSO) will have a common understanding on when an MP intends to cancel the registration of its facility.

than the amount required to cover its exposure.

Comments on Issue Description, Scope, etc

- To provide better visibility to all parties.
- Even though the rules provided the timeline for PSO to determine whether technical assessment is required, it is unclear on the part of the Market Participant when it intends to cancel its registration. With the change, it will provide a common understanding for all parties involved. However, effective date of cancellation must be reasonable, shall provide enough notification time for processing.

33. When energy, reserve or regulation shortfall situation applies, allow for offers of additional quantities of energy, reserve and regulation

Issue description

Chapter 6 Section 10.4.1.1.f allows for increased supply of energy, reserve or regulation to contribute positively to the resolution of energy, reserve or regulation shortfall situations in that dispatch period, where: (i) the shortfall situations were indicated in a system status advisory notice issued by the EMC in respect of a high-risk operating state or emergency operating state declared by the PSO; and (ii) at the time of submission of such offer variation or revised standing offer, the EMC has not yet withdrawn, in respect of that dispatch period, such system status advisory notice.

However as drafted it appears to limit the increased supply to only what there is shortfall of, that is when there is energy shortfall, can only increase the supply of energy. The same MW of capacity can be used to provide energy, reserve or regulation so increasing the supply of reserve and/or regulation even when there is only energy shortfall can actually relieve the energy shortfall as such increased supply of reserve and/or regulation can replace capacity which can instead be used for energy instead. This is similarly so when there is a reserve or regulation shortfall when there is increased supply not limited to just what there is shortfall of.

It is therefore proposed that Chapter 6 Section 10.4.1.1.f be amended to allow for increased of supply of energy, reserve and regulation when there is energy, reserve or regulation shortfall.

This would lead to an improvement in system security and less volatile prices. It will also lead to a reduced need for intervention by PSO as market participants are better able to take action to relieve shortfall situations, and less volatile prices for consumers.

Comments on Issue Description, Scope, etc

- Agree in principle to allow the increase to all products to alleviate system shortfalls.
- To provide flexibility to increase offers during supply shortfall.

34. Refund of credit support to market participants (MPs) who have closed the designated bank account for NEMS settlement.

Issue description

For MPs who have withdrawn from the market, the credit support pledged by the MPs is refunded after the final metering adjustment is made 252 days later. In some instances, the designated bank account for NEMS settlement is no longer operational.

Currently the market rules do not provide an avenue for the market operator (EMC) to handle refund of monies to MPs who have closed their designated accounts and are not contactable to make alternative arrangements even after reasonable efforts were made to contact the MP or in instances where MPs opt to forfeit the refund. As the money does not belong to EMC, approval from the regulator had to be sought to return the money to the market.

It is proposed to update the market rules to allow EMC to offset the credit supporting owing to the MP in the situations highlighted above, from EMC's administrative fees.

The inclusion in the market rules will provide clarity on the required action to be taken in instances where the MPs cannot be contacted or elect to forfeit the refund.

This will also reduce the administrative burden of having to seek the necessary approval from the regulator to return the credit support to the market.

35. Exclude provisional prices from Temporary Price Cap (TPC) Moving Average Price (MAP) calculation

Issue description

We propose to exclude provisional prices (in the context of price reruns), particularly those causing S$4,500/MWh prices (typically resulting from network status file errors or islanded bus bar issues), from the TPC calculation.

This exclusion is essential to accurately mirror market conditions and prevent over-interventions that could lead to price suppression and unwarranted claims.

Comments on Issue Description, Scope, etc

- The application of TPC should be revised since this temporary scheme looks set to stay in the NEMS system.
- Clearly erroneous provisional prices should be excluded when determining TPC triggering.

36. Provision of a more accurate demand forecast based on LAR and DAR

Issue description

There are instances where demand is over and under-forecasted interchangeably without a trend.

Senoko has observed a consistent and significant deviation in demand forecasts between LAR/DAR and DPR, as evidenced in the attached analysis.

This deviation contradicts PSO's assurance regarding the accuracy of their demand forecasts. This discrepancy may stem from PSO referencing DPR demand vs actual demand in their assessment of forecast accuracy.

An inaccurate DAR/LAR demand forecast can lead to over/under-dispatch of supply, especially with the Standing Direction A, which mandates firm generation supply offer submission by 6 pm on a day-ahead basis.

Over-dispatch results in suppressed market prices, while under-dispatch can lead to system instability and unwarranted regulatory intervention, such as DSS.

MPs rely on DAR/LAR demand forecasts for critical functions such as dispatch, price discovery, and settlement. Therefore, the accuracy of DAR/LAR demand forecasts is paramount for MPs.

Additional Analysis

Objective

- The chart is used to show the trend of over/under-forecast of demand in terms of MW for each period of a given month.

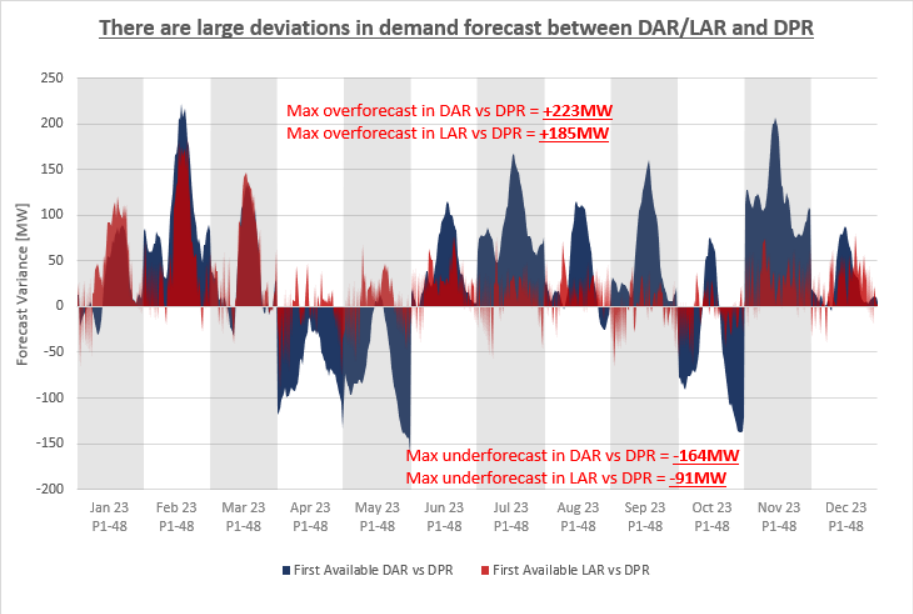
Assumptions and Methodology

1. The data range used in the analysis is from 1 Jan 2023 to 27 Dec 2023.
2. The first available DAR for each period of a given day is used i.e. there are multiple DAR runs for P1 of 1 Jan 2023, the first available DAR run (with the smallest market clearing ID) is selected.
3. The first available LAR for each period of given day is used i.e. there are multiple LAR runs for P1 of 1 Jan 2023, the first available LAR run (with the smallest market clearing ID) is selected.
4. There is only one DPR run for each period of a given day i.e. there are 48 DPR runs for 1 Jan 2023.
5. In summary, there are 48 selected DAR data points, 48 selected LAR data points and 48 DPR data points for each given day.
6. The differences between DAR and DPR, and LAR and DPR are calculated for each period of a given day to derive the over/under-forecast of demand.
7. Lastly, the chart is derived from taking the average P1-48 over/under-forecast of demand for each given month i.e. P1-48 for 1 – 31 Jan 23, P1-48 for 1- 28 Feb 23,…, P1-48 for 1 - 31 Dec 23

Results

1. The larger the blue area, the larger the over/under-forecast of demand between DAR and DPR i.e. Nov 23 shows large over forecasting of DAR vs DPR demand.
2. The larger the red area, the larger the over/under-forecast of demand between LAR and DPR i.e. Jan 23 shows large over forecasting of LAR vs DPR demand.

General observation, there are large deviations in demand forecast between DAR/LAR and DPR throughout 2023.



Comments on Issue Description, Scope, etc

- Yes, our company has also detected on some predictions a wide fluctuation in DAR/LAR to DPR prices. It is hence very difficult for us to make any further predictions using the given LAR/DAR information.
- Propose to EMC/PSO to review the demand forecasting methodology given that the IGS capacity share is huge and expected to continue to increase. Apart from the issues raised by the proposer, the large deviations in demand forecast also bring about the uncertainty in gas consumption and nomination. This has resulted in MPs bearing the financial cost for nomination divergence, as well as administrative burden under regulatory reporting. Through the review, we also propose for more transparency to the market in the methodology to forecast demand, including any adjustment factor.

37. Publication of other Temporary Price Cap (TPC) parameters

Issue description

Existing rules in Appendix 6N and the Final Determination Paper 'Temporary Price Cap Mechanism' shared only the R-USEP during the activation of TPC. For transparency purposes, we will like to propose that EMC share to us additional information such as the Market Clearing Engine (MCE) cleared prices for R-Contingency Reserves, R-Primary Reserves, R-Regulation and R-Market Network Node Prices on top of publication of R-USEP on EMC website and webservices.

MPs would be more well informed of the cleared MCE prices before they are capped during TPC activation and are empowered to make real time adjustment for more efficient outcome of the market.

Comments on Issue Description, Scope, etc

- Agreed that provision of additional data will improve market visibility.
- This would enhance transparency.
- We would like to also propose that LAR and DAR runs incorporate the TPC, and for EMC to publish the same set of TPC related data and parameters to the market for the forward runs as well.

38. Review of standing probability of failure (SPF) for new commissioning Generation Registered Facility (GRF) and Import Registered Facility (IRF)

Issue description

Existing SPF calculations methodology for new GRF (excluding transferred generation facilities)/IRF suggests that SPF of new GRF/IRF to be the average SPF of all GRFs/IRFs that are within the same GRF/IRF classification. The calculation methodology penalizes a new GRF/IRF that has no historical records of forced outages in the specified time frame which is not in accordance with our understanding of the causer-pay principle, where a more unreliable GRF/IRF should pay a larger share of reserve

cost. Hence, we will like to propose that SPF of a new GRF/IRF to be 0.001% instead, until IEQ data (more than 0) is captured for at least 4380 settlement intervals with IEQ more than 0 (or 4392 settlement intervals with IEQ more than 0 during a leap year). We will like to propose that calculation of SPF of new units that encounter at least 1 forced outage to be calculated the same methodology as the rest of the units (number of forced outages / total number of settlement intervals with IEQ more than 0).

MPs with newly commissioned GRF/IRF is given a fair playing field and clean slate for their operational reliability instead of imposing the reliability of other operators with similar GRF/IRF classification on them. This is align with the causer-payer spirit of the market rules and not penalising new participants for the actions of existing MPs.

Comments on Issue Description, Scope, etc

- Newly commissioned units tend to face greater plant instability as the operators and systems work through “teething issues”. Hence, the current methodology already discounts the risk the new unit poses to the system.

39. Speed up market registration process for generation facility connected at distribution network, e.g. Solar PV.

Issue description

Regarding facility registration, when EMC seeks advice on whether a facility poses any threat to the reliability or security of Singapore transmission system, it is proposed that the rules be updated for EMC to seek PSO’s advice on the facility connected at transmission network and Transmission Licensee’s advice on the facility connected at distribution network. (Chapter 2 of the 5.2.4.2).

PSO only endorses the connection scheme for facilities connected at the transmission network. The connection scheme at the distribution network is approved by Transmission Licensee. This change will speed up the market registration process for generation facility connected at distribution network e.g. Solar PV.

Comments on Issue Description, Scope, etc

- Speeding up the process would benefit all MPs.

Annex 3: Ranking Results by Key Stakeholders

Each stakeholder was asked for his view on the importance and urgency of each of the issues where work has not started. A score of 3 corresponds to “High”, 2 corresponds to “Medium”, and 1 corresponds to “Low”.

In the Grand Total column, the number in front of the bracket shows the ranking score and the number in the bracket gives the number of stakeholders providing that ranking score. For example, 1(7) means 7 stakeholders have ranked this item as 1 or “Low”.

The overall average score arising from each method is represented in the last 2 columns of Table 3A.

Table 3A: Scoring of issues by stakeholders

Issue No.	Issue Title	Grand Total	Overall Score (Simple Average Method)	Overall Score (Group-weighted Average Method)
37	Publication of other Temporary Price Cap (TPC) parameters	Importance: 1 (1), 2 (10), 3 (15) Urgency: 1 (1), 2 (13), 3 (12)	2.48	2.34
36	Provision of a more accurate demand forecast based on LAR and DAR.	Importance: 1 (4), 2 (3), 3 (18) Urgency: 1 (5), 2 (7), 3 (13)	2.35	2.13
35	Exclude provisional prices from Temporary Price Cap (TPC) Moving Average Price (MAP) calculation	Importance: 1 (3), 2 (10), 3 (13) Urgency: 1 (3), 2 (13), 3 (10)	2.33	2.27
7	Review of obligation to act within 5 minutes when an action is to be taken “promptly” or “immediately”	Importance: 1 (6), 2 (6), 3 (13) Urgency: 1 (7), 2 (9), 3 (9)	2.10	1.73
33	When energy, reserve or regulation shortfall situation applies, allow for offers of additional quantities of energy, reserve and regulation	Importance: 1 (5), 2 (10), 3 (11) Urgency: 1 (8), 2 (12), 3 (6)	2.08	2.00

8	Exemption from Gate Closure Rules for cancelled synchronisation	Importance: 1 (5), 2 (3), 3 (15) Urgency: 1 (6), 2 (8), 3 (9)	2.01	1.53
39	Speed up market registration process for generation facility connected at distribution network (e.g. Solar PV.)	Importance: 1 (13), 2 (5), 3 (8) Urgency: 1 (13), 2 (6), 3 (7)	1.79	2.11
25	Enhance the publication frequency of the Pre-Dispatch Schedules (DAR) from every 120 minutes to 60 minutes	Importance: 1 (12), 2 (4), 3 (9) Urgency: 1 (13), 2 (4), 3 (8)	1.77	1.55
38	Review of standing probability of failure (SPF) for new commissioning Generation Registered Facility (GRF) and Import Registered Facility (IRF)	Importance: 1 (12), 2 (4), 3 (9) Urgency: 1 (14), 2 (4), 3 (7)	1.73	1.50
30	Load forecasting and MCE dispatch and price determination when contracted Fast Start unit(s) is performing monthly test or when actual activation	Importance: 1 (5), 2 (12), 3 (6) Urgency: 1 (3), 2 (11), 3 (9)	1.67	1.48
13	Review of gate closure exemptions following a forced outage	Importance: 1 (7), 2 (6), 3 (9) Urgency: 1 (10), 2 (9), 3 (3)	1.60	1.19
12	Methodology to calculate Vesting Contract Reference Price (VCRP)	Importance: 1 (12), 2 (8), 3 (6) Urgency: 1 (19), 2 (16), 3 (1)	1.54	1.53
19	Introduction of SWIFT as a form of Bank Guarantee	Importance: 1 (11), 2 (10), 3 (5) Urgency: 1 (19), 2 (6), 3 (1)	1.54	1.55
17	Additional Market Re-run for Meter Data Error discovered between First and Second Nominated Day	Importance: 1 (11), 2 (9), 3 (4) Urgency: 1 (14), 2 (8), 3 (2)	1.48	1.26
34	Refund of credit support to market participants (MPs) who have closed the designated bank account for NEMS settlement	Importance: 1 (14), 2 (6), 3 (5) Urgency: 1 (15), 2 (10), 3 (0)	1.46	1.40

10	Review of Regulation Effectiveness Factor or similar compensation scheme to reward greater responsiveness of facilities for Regulation	Importance: 1 (11), 2 (7), 3 (5) Urgency: 1 (13), 2 (9), 3 (1)	1.42	1.40
15	Amendments to the StartGeneration used in the real-time schedule (RTS), and the first dispatch period of the short-term schedule (STS) and pre-dispatch schedule (PDS)	Importance: 1 (12), 2 (13), 3 (1) Urgency: 1 (19), 2 (7), 3 (0)	1.42	1.39
23	Review of provisions on suspension and termination orders	Importance: 1 (16), 2 (6), 3 (4) Urgency: 1 (20), 2 (6), 3 (0)	1.38	1.40
32	To require an MP submitting a request for cancellation of facility registration to also state the intended effective date of cancellation	Importance: 1 (18), 2 (2), 3 (5) Urgency: 1 (18), 2 (4), 3 (3)	1.38	1.45
18	Modelling of on-site ambient temperature into the MCE such that GTs/CCPs' maximum capacity are adjusted dynamically	Importance: 1 (15), 2 (6), 3 (3) Urgency: 1 (17), 2 (4), 3 (3)	1.35	1.36
22	Review of the requirement for registration as commissioning generation facility for generation settlement facilities, except for intermittent generation facilities of aggregate name-plate rating 10MW or more	Importance: 1 (19), 2 (1), 3 (6) Urgency: 1 (23), 2 (1), 3 (2)	1.35	1.37
20	Review of Expected Net Exposure (ENE) formula and application	Importance: 1 (18), 2 (7), 3 (1) Urgency: 1 (19), 2 (7), 3 (0)	1.31	1.36
11	Alignment of performance standards of Interruptible Load scheme and Spinning Reserves	Importance: 1 (14), 2 (4), 3 (5) Urgency: 1 (16), 2 (7), 3 (0)	1.29	1.23
24	Review of the timeline for suspension hearing	Importance: 1 (18), 2 (8), 3 (0) Urgency: 1 (22), 2 (4), 3 (0)	1.23	1.30
27	Adjustment for regulation charges and price neutralisation after final settlement	Importance: 1 (21), 2 (4), 3 (1) Urgency: 1 (23), 2 (2), 3 (1)	1.19	1.30

21	Review of handling the metering adjustment payment arising from settlement reruns on a defaulting market participant	Importance: 1 (19), 2 (5), 3 (1) Urgency: 1 (22), 2 (2), 3 (1)	1.17	1.16
31	Redeeming the full amount of an MP's Banker's Guarantees (BGs) upon default	Importance: 1 (14), 2 (9), 3 (0) Urgency: 1 (16), 2 (7), 3 (0)	1.19	1.26
14	Provisions regarding settlement bank and settlement account	Importance: 1 (19), 2 (5), 3 (0) Urgency: 1 (19), 2 (3), 3 (2)	1.15	1.13
26	Improvement of the prepayment process	Importance: 1 (23), 2 (0), 3 (2) Urgency: 1 (23), 2 (0), 3 (2)	1.12	1.13
16	Review of Automatic Financial Penalty Scheme (AFPS)	Importance: 1 (20), 2 (0), 3 (2) Urgency: 1 (20), 2 (1), 3 (1)	0.98	0.87
9	Review of definition of forced outage in gate closure exemptions	Importance: 1 (17), 2 (2), 3 (1) Urgency: 1 (17), 2 (2), 3 (1)	0.92	0.82
28	Removal of Second Settlement Rerun	Importance: 1 (14), 2 (3), 3 (1) Urgency: 1 (14), 2 (3), 3 (1)	0.88	1.12
29	Improvement of real-time information flow regarding unplanned outages and return to service	Importance: 1 (10), 2 (2), 3 (2) Urgency: 1 (11), 2 (2), 3 (1)	0.73	0.86

Annex 4: Rating Methodology

Votes on removal are treated as a “0” rating. Such votes are still considered in the calculation of an issue’s average urgency and importance.

For example, if out of a total of five stakeholders, one votes on removing the issue. The overall score will be calculated as such:

Table 4: Scoring of issue by 5 stakeholders

Participant	A	B	C	D	E
Urgency	[Remove]	2	3	1	2
Importance	[Remove]	1	2	1	3

- Urgency = (0 + 2 + 3 + 1 + 2) / 5 = 1.6
- Importance = (0 + 1 +2 +1 + 3) / 5 = 1.4
- Overall score = (1.6 + 1.4) / 2 = 1.5