RCP PAPER NO.	:	**EMC/RCP/154/2026/CP103**
SUBJECT	:	**PARTICIPATION OF FAST START UNITS**
FOR	:	**DISCUSSION**
PREPARED BY	:	**ALFRED TOH** **ECONOMIST**
REVIEWED BY	:	**POA TIONG SIAW** **SVP, MARKET ADMINISTRATION**
DATE OF MEETING	:	**16 JULY 2026**

Executive Summary

This concept paper introduces a proposal to enhance clarity and transparency over the participation of Fast Start ("FS") units.

At present, market participants do not have a clear view of the treatment, operation and activation of FS units. EMC evaluates the participation of these units for consistency based on established market principles and provides its views.

EMC notes that current practices saw FS units submit market offers in some scenarios. From the perspective of **achieving** fair and efficient market outcomes, EMC considers that FS units should not offer into the market **both** during activation and testing.

EMC recommends that information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO.

EMC recommends that the RCP support the proposal, and task EMC to draft the relevant rule modifications.

At the 154th RCP meeting, the RCP **by majority vote** supported EMC's recommendation that FS units should not offer into the market both during activation and testing. The panel also deferred the decision on issuing FS activation advisory notices, citing the need for further analysis by EMC.

1. Introduction

This concept paper aims to provide clarity on the treatment and participation of Fast Start units, particularly in relation to their activation and to ensure that their participation remains consistent with fair and efficient market outcomes.

2. Background

EMC received a proposal to evaluate how demand forecast, Market Clearing Engine ("MCE") dispatch and price determination are impacted when fast start ("FS") units are activated and called upon by the Power System Operator ("PSO"). In the proposal, an efficient market re-run methodology was proposed, to ensure that market integrity and the price formulation process are not affected by artificial out-of-market activities.

EMC considers it necessary to first establish clarity around the participation of FS units before assessing their market impacts. Currently, market participants are not clear about the treatment and operation of FS units.

In particular, this includes assessing what constitutes fair and appropriate participation behaviour that is aligned with market principles, and evaluating how such behaviour may impact market outcomes. Establishing clarity on this will ensure consistency in any subsequent evaluation of market impact and possible re-run methodology.

3. What are fast start units?

3.1 Overview of Ancillary Service Market

Ancillary services are power system resources which are required to ensure the security, reliability and stability of the Singapore power system. These include products such as regulation, reserve, black start and fast start services.

While regulation and reserve are procured through the real-time spot market, fast start service is procured through contractual arrangements. Table 1 below outlines the differing characteristics of regulation, reserve, black start and fast start services.

Table 1: Ancillary service market, by products

Service	Market	Details	Response Time
Regulation	Real-time spot market	Used to fine tune demand supply variations in the grid and minimise grid frequency deviation (from 50Hz)	In seconds
Reserve	Real-time spot market	Standby generation capacity or resources (e.g. interruptible load) that can be called upon when there is an unforeseen supply disruption (e.g. power plant outage)	Primary (In seconds) Contingency (In minutes)
Black Start	Negotiated contracts	Resource that can self-start without any source of off-site electric power and maintain adequate voltage and frequency while energising isolated transmission facilities and auxiliary loads of other generating units	In minutes

Fast Start	Negotiated contracts	Resource that can be called upon quickly to begin generation at a set level. A secondary safety net in the event scheduled reserves are insufficient (e.g. depleted)	In minutes

3.2 Procurement of FS units

According to Section 8.1.1 of Chapter 5 of the Market Rules, EMC, on behalf and at the request of the PSO, shall procure, primarily through contracts, certain physical services that are needed to maintain reliable PSO controlled system operations but are not available in the real-time markets.

Additionally, Section 8.2.2 of Chapter 5 of the Market Rules states that EMC may procure the following principal contracted ancillary services:

1. Reactive support and voltage control service;
2. Black start capability;
3. Fast start service; and
4. Reliability must-run service.

FS service directly qualifies as one of these physical services that may be procured by EMC. The procurement process is generally done through a Request for Proposal ("RFP") called by PSO through EMC, or a PSO-directed negotiated contract.

Throughout the contracted term, in return for providing FS service, the FS service provider will receive annual capability payments ("ACP") based on projected capital expenditure ("CAPEX") and fixed operating expenditure ("OPEX").

When FS units are activated, any revenue earned through the Singapore Wholesale Electricity Market ("SWEM") will instead be used to offset the running cost incurred during the activated periods. Any other variable OPEX incurred during the month, shall be subsequently claimed by the FS service provider as well. As such, FS service providers recover their costs through monthly claims of variable OPEX, with the excess market-earned revenue returned or deficit topped up, via the Monthly Energy Uplift Charge ("MEUC"). Any profits earned from the SWEM through activations, are not retained by the FS service providers.

This reflects that FS units are not intended to earn revenue through the market clearing process in SWEM but are instead compensated for their availability and capability to provide fast start services when required.

3.3 Purpose of FS units

FS units are called upon to restore reserve lost following an outage of online generating units. They may also be activated to address shortfalls due to start-up failures of other generation units. FS units aim to address system security issue such as quick restoration of supply during major system disturbances.

It is thus reasonable to infer that, outside of testing activities, FS units are activated during system stress conditions such as tight supply, unexpected outages, etc., rather than activated under normal system market conditions.

Operationally, the role of FS units is distinct from conventional generation plants. These FS units are resources that can be rapidly activated to deliver output at a specified level, serving as a backup when primary or scheduled reserves are unavailable or depleted. Also, these

FS units serve as reliability safety nets and are not designed for sustained base load operations.

3.4 Requirements of FS units

Fast Start units must comply with the performance standards set out in the Market Rules, as well as the specific requirements detailed in the FS service contract. At a minimum, FS units must meet the following operational criteria:

- Initially offline and not synchronised to the transmission system;
- Synchronise to the transmission system within 10 minutes upon receipt of instruction from PSO;
- Ramp up to instructed output level within 15 minutes of synchronisation;
- Must be able to maintain its instructed output for at least 4 hours after synchronisation; and
- Stay online until the power system normalises in the event of major system disturbances.

3.5 Conditions of Dispatch

According to Section 8.3.5 of Chapter 8 of the System Operation Manual ("SOM"), the PSO shall schedule and dispatch fast start unit under the following conditions:

a) Forced outage of generating unit and reserve falls below the level required to cover forced outage of the remaining generating unit with largest output level; and
b) Failure to start-up or delay synchronisation of a generating unit, scheduled by the Market Clearing Engine earlier, and reserve falls below the level required to cover forced outage of the generating unit with largest output level.

Actual real-time emergency activation is determined by PSO's standard operating procedure ("SOP") and EMC is not privy to the exact market conditions under which FS units are activated.

4. Types of FS unit activations

The various types of FS unit activations can be categorised into the following:

1. Emergency activation
2. Testing activities

4.1 Emergency activation

FS units are primarily procured to address system security needs during major system disturbances. Emergency activation is the fundamental purpose for which these units exist.

In such situations, FS units are deployed to rapidly restore system balance and stability, including during shortfall recovery events. Emergency activations are determined by the PSO in accordance with its SOPs, considering real-time market conditions and system requirements.

4.2 Testing activities

EMC understands from FS service providers that there are currently two types of testing activities: surprise tests and scheduled tests. EMC notes that a test is classified as a 'surprise' only if notification to the FS service provider is provided less than 3 hours in advance. Where notification exceeds 3 hours, the activation is considered a scheduled test.

The 3 hour timestamp shall be referenced based on the delivery of the PSO's instruction letter or memo.

4.2.1 Surprise test

In the event of surprise tests, FS units are required to start up and ramp up within the specified timeframe without any prior notice.

Surprise tests serve as critical readiness assessments, evaluating whether FS units can start, synchronise and ramp up as required under prevailing actual real-time market and operational conditions.

These tests provide confidence that the units can and will respond reliably and as intended when urgently required by the system, particularly during system stress and other emergency events.

4.2.2 Scheduled test

During scheduled tests, FS units are scheduled to run under controlled conditions to stress-test performance and verify operational capabilities and readiness. Operators of FS units are provided with the PSO's instructions and details (e.g., date, periods, duration, etc.) for activation in advance.

In line with the 3-hour threshold established above to distinguish between surprise and scheduled tests, instructions from the PSO should be notified and received at least 3 hours in advance of the activation period.

5. Analysis

5.1 How should the fast start units behave?

EMC observed that participation behaviour during testing activities varied. FS units offer in upon activation at times, and do not offer at other times. This inconsistency reflects a lack of clarity in the Market Rules. To address this gap, EMC set out to evaluate what constitutes fair and appropriate participation behaviour that is aligned with good market principles, and assess how such behaviour may impact market outcomes. In the following sections, EMC considers the behaviour of FS units across the different types of activation.

5.1.1 Offering in quantities during emergency activation?

EMC considers that FS units should not offer into the market during emergency activation.

During emergency activation, the priority is to urgently address the system security issue. FS units act as a reliability safety net in such cases. The operators of the FS units are expected to comply with the PSO's directions and are not required to offer into the market.

This participation behaviour preserves real-time market price signals, ensuring they accurately reflect tight supply conditions. Real-time price signals serve to attract additional offers and supply from other generating units, enabling the market to restore demand-supply balance.

By not offering in, the dispatch process is not interfered and avoids unintentionally displacing units already expected to run (e.g., due to unwithdrawn offers during forced outages).

5.1.2 Offering in quantities during testing activities?

EMC considers that FS units should not offer into the market during testing activities.

As the tests are designed to simulate emergency activations, FS units should behave in the same manner as in actual emergency activations. They must ensure the units are operationally ready to comply with the PSO's directions.

The primary objective is a technical validation, requiring FS units to demonstrate and verify their operational capabilities and readiness under prevailing market conditions.

EMC considers that FS units do not participate in a manner comparable to commercial generation units. Commercial generation units submit offers in each trading period in the SWEM. They are dispatched based on their offers and earn revenue (and recover cost) through the nodal prices determined by the market clearing and scheduling process.

In contrast, FS units operate under a fundamentally different cost recovery framework. As noted above, FS service providers earn pre-determined annual capability payments and recover costs through monthly variable OPEX claims under contractual arrangements. In addition, the monthly claim on variable OPEX is administered through the MEUC, which is borne by market participants. These payments are designed to compensate for the availability and capability of FS units to provide system security services, rather than for energy supplied through market dispatch.

EMC understands that, in practice, FS units may offer their scheduled testing quantities at $0/MWh or negative price levels to ensure dispatch. However, doing so is not consistent with competitive market-based bidding. It merely fulfils the operational and contractual obligations of FS units.

The injection of non-competitive supply associated with FS unit activation alters the supply-demand balance faced by the conventional generation units, which continue to compete on the basis of price under market conditions. There is a disconnect between these supplies that compromises the wholesale price signal.

Furthermore, due to the nature and purpose of FS units, EMC assumes that they are not part of the risk-setting framework for the PSO's procurement of N-1 contingency requirements. FS units serve as an additional reliability safety net outside the N-1 contingency calculations.

EMC therefore considers that FS units are inherently out-of-market given their remuneration structure, and should therefore not be included as part of the competitive supply stack in the market.

6. Proposal

From the perspective of achieving fair and efficient market outcomes, EMC considers that FS units should not offer into the market both during activation and testing.

EMC recommends that information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO.

7. Consultation

The concept paper was published for consultation on 12 June 2026. The comments raised and EMC's response are provided below.

Table 1: Summary of industry comments

Received from	Comment	EMC Response
Keppel Merlimau Cogen	Keppel supports the recommendation that fast start units should not bid into the market since their costs are already intended to be recovered through out-of-market settlements via the ACP and MEUC. Keppel supports EMC's recommendation that all fast start unit activations be notified and published to Market Participants. Keppel proposes that EMC should clarify with EMA/PSO on the regulatory and operational framework of units dispatched outside of the MCE. As the Singapore market develops, the number of such units is expected to increase, including Meranti, fast start, and import backup units. We would like to seek EMA's plans for a holistic regulatory approach to such units.	EMC appreciates Keppel Merlimau Cogen's comments. Keppel Merlimau Cogen's comments align with the analysis and proposal of the paper. EMC will raise Keppel Merlimau Cogen's concerns with the EMA/PSO for further clarification.
Tuas Power	Tuas Power Generation ("TPG"), TP Utilities ("TPU") and Tuas Power Supply ("TPS") support EMC's proposal that "FS units should not offer into the market during both types of activations, namely emergency activations and testing". In 2003, the FS units did not offer into the market when activated. Therefore EMC's proposal is consistent with past practice. TPG, TPU and TPS also support EMC's recommendation that "information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO" as this is in line with market transparency and timely dissemination of information.	EMC appreciates Tuas Power's comments. Tuas Power's comments align with the analysis and proposal of the paper.

Received from	Comment	EMC Response
Senoko Energy	Senoko supports EMC's proposal to enhance clarity on the participation of Fast Start ("FS") units and agrees with the overarching objective of ensuring and achieving fair and efficient market outcomes, which is aligned with the core market principles. With reference to Section 3.3 (Purpose of FS units) of the paper, Senoko agrees that it will be very unlikely for FS units to be dispatched regularly and for long stretches. Hence, the primary focus of FS units should be syncing to the grid, complying with PSO's instructions and to avoid distorting market price signals. With reference to Section 5.1.2 (Offering in quantities during testing activities) of the paper, Senoko agrees that offering non-competitive offers will not only distort market price signals, but also detrimental to market/price-based generation units. Given that FS units are on a cost-recovery framework, it does not function as a merchant generation unit and our view is that it should not be part of the competitive supply stack. With reference to Section 6 (Proposal) of the paper, Senoko strongly agrees that such information should be disseminated in a timely manner so as to maintain market integrity. <u>To include Directed Supply Scheme (DSS) volumes</u> DSS volumes are: • Settled out-of-market • Fixed cost recovery (S$50/MWh) • Any over-recovery will be refunded, any under-recovery will be compensated	EMC appreciates Senoko Energy's comments. Senoko Energy's comments align with the analysis and proposal of the paper. EMC wishes to clarify that the primary objective of the paper is specifically focused on the participation framework surrounding FS units. While the broader implications for the DSS framework fall outside the scope of this paper, EMC notes Senoko Energy's request for clarity on how the DSS framework will be handled.

Received from	Comment	EMC Response
	Obligations for Gencos when DSSed • To ensure that DSSed unit is available • To comply with instructions in a timely manner On the same note as FS units, DSSed units will then be accompanied by $0/MWh or Negative prices to ensure dispatch and compliance with PSO's instructions. Such behaviour not only distorts market price signals as it removes scarcity pricing, it would also inadvertently displace units that otherwise would have been scheduled (if prices remain elevated). Hence, our view is that DSS volumes should not be offered into the market as it creates a huge price distortion: • It is not voluntarily offered based on price • It is triggered by system requirements • It does not reflect competitive bidding behaviour	
PacificLight Power	PLP advocates for a fair, efficient and transparent market with minimal interventions unless necessary. PLP agrees with EMC that Fast Start (FS) units, whether undergoing testing or activated by the PSO, are inherently out-of-market due to their intended purpose and pre-determined remuneration structure. As such, FS units should not offer into the market to form part of the competitive supply stack under any scenario, including but not limited to monthly tests, FCO tests and commissioning activities. We believe that this is aligned with consumers' interests. Given that FS units are OCGTs that are less efficient with higher	EMC appreciates PacificLight Power's comments. PacificLight Power's comments align with the analysis outlined in Section 5 of the paper. EMC notes the comments on alignment on consumers' interests. EMC highlights that non-competitive offers from FS units directly impact and distort the competitive supply stack.

Received from	Comment	EMC Response
	variable cost relative to the market, market participation by FS units (typically at negative or zero price to secure dispatch) suppresses market prices and widens the gap between its operating costs and market revenues. The resulting shortfall is currently recovered through uplift charges (i.e. MEUC) which is borne by the consumers. Consumers are therefore incurring additional costs without receiving any incremental reliability benefit beyond that already procured and paid for under the FS contractual arrangement. PLP further proposes that a clear operational framework and dispatch priority be established between FS unit activation and DSS activation. This would provide greater clarity to market participants on the circumstances under which each resource type would be utilised and in which sequence, given that generation procured by MCE would be potentially displaced. Lastly, PLP supports greater transparency surrounding market interventions and proposes that all DSS and FS activations be communicated to the market through a post-event advisory notice.	EMC wishes to clarify that the primary objective of the paper is specifically focused on the participation framework surrounding FS units. While establishing a definitive operational dispatch hierarchy with DSS falls outside the scope of this paper, EMC acknowledges that PacificLight Power requires clarity on the sequencing and utilisation of resources such as DSS and FS units. EMC appreciates PacificLight Power's comments on publishing FS activation advisory notices.
YTL PowerSeraya	While we support that FS units should not offer into the market during activations and testing, we seek for the team to extend the scope to other FS activities such as Fuel-changeovers (FCO), commissioning and any re-commissioning activities after a minor or major overhaul. In addition, we request that details of the tests to be conducted or that have been conducted (after surprise tests) to be provided to MPs in the form of a market advisory notice. MPs should also be informed of how many tests (scheduled and	EMC appreciates YTL PowerSeraya's comments. EMC is of the view that other activities such as FCO, commissioning or any re-commissioning are subsumed within the activation scenarios outlined in Section 4 of the paper. Therefore, EMC considers that FS units shall not offer into the market while undergoing these activities.

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	surprised) are to be expected for each quarter in a calendar year for clarity. Lastly, regarding the IEQ impact on GRFs, we observe that during surprise test where the FS unit injects into the grid without offering into the market, our generation IEQ deviates from schedule much larger than any other periods for the same day. Hence while market energy price is unaffected, operationally there is a quantity difference that is unexpected. Therefore, we recommend the team to study the operational impact and explore the viability of a compensation mechanism.	EMC appreciates the comments on publishing FS activation advisory notices. We acknowledge that injecting energy without a market offer creates a real-time quantity difference that impacts generation IEQ. However, these FS units are primarily procured for system security purposes, and they are funded through a separate cost recovery framework. Our fundamental position remains that they must be kept "out-of-market" to prevent non-competitive supply from distorting real-time market price signals. In maintaining real-time system demand-supply balance without compromising price signals, a certain degree of IEQ impact should be expected during activations. EMC notes the comments on recommendation to study operational impact and the viability of compensation mechanism.
Sembcorp Cogen	<u>FS Activation vs Economic Signals (CVP Misalignment)</u> Sembcorp agrees that Fast Start ("FS") services are designed as an out of market reliability mechanism, activated in accordance with Section 8.3.5 of Chapter 8 of the System Operation Manual ("SOM") under conditions of reserve shortfall. However, Sembcorp notes that the Paper	EMC notes Sembcorp Cogen's comments. EMC recognises that the paper did not consider interaction between FS activation and the economic dispatch of MCE,

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	does not consider the interaction between FS activation and the Market Clearing Engine ("MCE") economic dispatch framework, particularly in the presence of stepwise Constraint Violation Penalties ("CVP"). Specifically, the trigger on FS activation requires MCE to report that reserve falls below the required requirement level. For example, under the current CVP framework, the prescribed penalty of $185/MWh for contingency reserve violation (reference to the lowest price bound values stated in Appendix 6J, J.3 of Market Rules for contingency reserve) may not be sufficient to economically justify a commitment of FS service. As observed in the Paper, this may result in MCE tolerating reserve shortfalls (economically), while PSO intervenes via FS activation (operationally). While this may be outside the immediate scope of CP103, Sembcorp recommends that EMC could start a review the calibration of CVP parameters (Appendix 6J) to ensure consistency between market outcomes and Reliability actions (including FS activation). <u>Demand Forecasting and "Phantom Generation" Effect</u> On the paragraph 5 of Analysis section of the Paper, Sembcorp understand the intention of the Paper is to set a correct clearing price with the participation of FS contracted under Market Rules to provide FS services. However, Sembcorp noted that the Paper did not account of the Section 4.1 of Chapter 4 of SOM, where "Half-hourly system load/demand is a summation of the average output, measured at all centrally dispatch generating facilities' terminal and import facilities' connection point, over a half-hourly period."	specifically the stepwise CVP. EMC wishes to clarify that the primary objective of the paper is specifically focused on the participation framework surrounding FS units, therefore the comments on calibration of CVP parameters are not directly relevant to this paper. Reviewing the CVP parameters falls outside the scope of this paper, as the overall framework is currently undergoing a holistic review under a separate workstream. EMC recognises the concern that if FS units' injections are included in the calculation of forecasted half-hourly system load/demand, it could cause a "phantom generation" issue. EMC notes the suggestions for a two-stage market run. However, this approach resembles a counterfactual re-run methodology that falls outside the scope of EMC's current analysis in this paper. The fundamental market principle remains that because FS units offer non-competitive supply, they

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	Inferred from this section of SOM, the forecasting of system demand could include the output of FS units, Sembcorp is concerned that this would create "phantom generation" into the power grid as other generating facilities would be scheduled by MCE to meet the system demand whereby, at the same time, FS units are activated by PSO to ramp up. This applied to both emergency activation as well as planned FS testing activities. <u>Incomplete representation of the supply stack</u> If the analysis of the Paper could not include the points stated in Paragraph 4 above, Sembcorp viewed that FS should not be exempted to place offer in the MCE as it could distort the completeness of supply. In addition to the Rule Change Proposal received by EMC, Sembcorp suggested to perform a two-stage of market run by MCE whenever there is a FS activation. To achieve a fair-trading outcome for each trading period, MCE can run the first stage with FS's offers (at zero price) to set the dispatch schedule for all generating facilities and to report the sufficiency of supply (any shortfall etc) from all generating facilities (including FS) and then run a second stage without FS's offers to set the clearing price for settlement. <u>Dissemination of FS activation information</u> Sembcorp agrees with the recommendation that information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO. This is in line with a transparent and efficient market design.	must be excluded from the economic supply stack entirely to achieve efficient market clearing outcomes. EMC highlights that the PSO retains the operational capability to balance the system in real-time by pulsing generation units up or down. Therefore, EMC maintains that keeping FS units out-of-market is the most appropriate participation framework. EMC appreciates Sembcorp Cogen's comments on publishing FS activation advisory notices.

Received from	Comment	EMC Response
EMC Markets and Operations	As the market operator, the EMC Markets and Operations team acknowledge the intent of the CP103 proposal to provide greater clarity on the operational behaviour of Fast Start (FS) units. However, in reviewing the proposal that FS units should strictly not offer into the market during scheduled tests and non-emergency activations, we have identified several potential implications to physical dispatch and power system operations: • Dispatch Blind Spots and Over-Supply Risk: When an FS unit is physically injecting energy into the grid, its output directly contributes to the system's total real-time system demand. If the unit remains excluded from the Market Clearing Engine's (MCE) supply stack, the MCE will unnecessarily schedule marginal facilities to meet the same load. This creates a structural misalignment between the physical state of the power system and the MCE dispatch schedule, introducing a risk of over-supply. • Increased Requirement for Manual PSO Interventions: Because of the MCE dispatch blind spot, the marginal facilities scheduled by the MCE will inevitably conflict with the actual output of the FS unit during real-time operations. This would necessitate manual intervention by the Power System Operator (PSO), specifically through constraining off (curtailing) these newly scheduled units, to maintain power system balance and frequency. Such interventions reduce operational efficiency and increase real time complexity.	Comments from EMC Markets and Operations are noted. It is highlighted that the PSO retains the operational capability to balance the system in real-time by pulsing generation units up or down. The fundamental argument is that because FS units provide non-competitive supply, they should not be included in the competitive supply stack if the market is to achieve competitive market clearing prices. Therefore, EMC considers that keeping FS units out-of-market is the most appropriate. EMC will consult with the PSO on any operational burdens or difficulties in manual intervention to maintain power system balance and frequency. FS units and DSS have fundamentally different technical, commercial, and operational characteristics. Therefore, they do not require identical regulatory treatment. Consequently, a comprehensive review of the DSS framework falls outside the scope of this paper.

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	• Operational Inconsistencies with Existing Practices (Direct Supply Scheme - DSS): The exclusion of FS units from the MCE also introduces inconsistency with current Direct Supply Scheme (DSS) protocols. Under existing arrangements, facilities instructed by the PSO to generate are required to submit market offers to secure dispatch, thereby ensuring visibility within the MCE and avoiding dispatch blind spots. The current CP103 proposal would result in FS units being treated differently from other similarly directed resources, creating a divergence from established operational and regulatory practices.	
Power System Operator	FS should offer into the market for scheduled and planned tests. For surprise tests including actual activations, FS will not be able to offer into the market in advance. For scheduled and planned tests, the additional FS capacity should be reflected in the market dispatch, thereby minimising the imbalance between scheduled supply and forecasted demand. The forecasted demand should not be adjusted to accommodate the additional FS capacity when there is no actual physical load shedding. Adjusting the demand forecast to offset the additional FS capacity would distort the true supply-demand balance and reduce the accuracy of market scheduling. EMA/PSO did not provide advance notice when MP was conducting DLP tests, and a similar approach should be maintained for FS testing to ensure consistency and	EMC notes the PSO's acknowledgement that FS units will not be able to offer into the market during emergency activations and surprise tests. EMC understands that during these activation scenarios, the PSO retains the operational capability to balance the system in real-time by pulsing generation units up or down. EMC is uncertain what 'minimising the imbalance between scheduled supply and forecasted demand' mean. EMC understands this to be PSO's practical concern that the unoffered FS capacity will not be accounted for in the market

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	preserve market neutrality. Thus, there is no need to issue an advisory notice.	clearing process during scheduled tests. If so, EMC notes that the same situation applies to FS activations during emergency and surprise tests. Therefore, the similar treatment and approach taken by the PSO can be extended to a pre-planned scheduled test as well. EMC notes the PSO's comments that the forecasted demand should not be adjusted, as doing so distorts the true supply-demand balance. By the same token, submitting non-competitive supply offers into the supply stack produces similar distortive effects in real-time market price signals and potentially displaces commercial generating units. Therefore, to maintain market efficiency, EMC considers that if the forecasted demand remains unadjusted, the FS units must be kept "out-of-market" and should not offer into the market under all the activation scenarios. On comparison with DLP tests, EMC notes that the DLP tests were temporary arrangements, and unique to Meranti Power. As a standing product class,

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		EMC considers that FS participation framework should be based on sound market principles. As the activation of FS units may physically displace other commercial generation units, a lack of transparency creates information asymmetry for market participants. Finally, based on the submitted comments, EMC is unable to identify specific operational implication that impacts system security. However, EMC will further work with the PSO to ensure the FS participation model considers both system security and market efficiency.

8. Conclusion and Recommendation

This paper aims to provide clarity and transparency on the treatment and behaviour of FS units, ensuring that their participation is consistent with their role in maintaining system security, while preserving market clearing integrity and achieving efficient market outcomes.

EMC considers that FS units should not offer into the market during both emergency activations and testing. While EMC's position is rooted in market principles, the analysis remains subject to inputs from the regulatory perspective of EMA, which should be accounted for in this paper for it to be robust.

Nevertheless, regardless of the view on the role of FS quantities in market clearing, it is in the interest of the market to receive timely information on any FS activation. To that end EMC recommends in this proposal that:

1. Information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO.

EMC therefore recommends that the RCP **support** the proposal, and task EMC to draft the relevant rule modifications.

9. Decision at the 154th RCP Meeting

The concept paper was discussed at the 154th RCP meeting.

The panel deferred voting on the recommendation that information on the activation of FS units be published and disseminated to market participants through an advisory notice issued by the PSO.

The panel considered that implementation details and market impacts of using advisory notices required further evaluation. Specifically, the panel requested that EMC evaluate whether an ex-ante or post-event advisory notice would be more appropriate.

Whereas EMC originally proposed deferring a vote on whether FS units should offer into the market pending regulatory input, the panel determined that the analysis presented was sufficient for a recommendation. Accordingly, the panel **by majority vote supported** the proposal that FS units should not offer into the market during both emergency activations and testing, and tasked EMC to draft the relevant rule modifications.

The following Panel members supported EMC's recommendation:

1. Mr. Henry Gan (Representative of EMC)
2. Mr. Calvin Quek (Representative of Generation Licensee)
3. Mr. Tan Jian Hui (Representative of Generation Licensee)
4. Mr. Teo Chin Hau (Representative of Generation Licensee)
5. Mr. Andrew Tan (Representative of Retail Electricity Licensee)
6. Mr. Sherman Toh (Representative of Transmission Licensee)
7. Mr. Wong Yew Chung (Person experienced in Financial Matters in Singapore)
8. Dr. Toh Mun Heng (Representative of Consumers of Electricity in Singapore)

The following Panel members did not support EMC's recommendation:

1. Mr. Lee Kim Hwee (Representative of the PSO)
2. Mr. Cheong Zhen Siong (Representative of Wholesale Electricity Trader)
3. Mr. Fong Yeng Keong (Representative of Consumers of Electricity in Singapore)