

Annex 1 – TPC Consultation Feedback and Responses

Stakeholder	Section/Paragraph	Comments	Responses
Air Liquide Singapore Pte Ltd	Paragraph 13	<p>Since JKM spot prices are reflective of the current pricing level of LNG, it may not accurately reflect the pricing of a longer term LNG contract or that of PNG contracts. In reality, gencos could hedge against the spot JKM prices through swaps to more stable fuel indices like BRENT and HSFO at prevailing rates and would contract NG for periods of 1 year or longer. Instead of using whichever higher of JKM spot price or vesting contracts to compute the LRMC, it may be more suitable to calculate the LRMC based on the higher of long term vesting contracts or longer term fuel linked NG contract of ≥ 1 year (instead of JKM spot LNG pricing) to represent "shorter-termed contracts" than the long term vesting contract, whichever higher to accurately reflect the actual fuel cost of the gencos. On the other hand, we support that a mechanism should be in place for Gencos to recover their cost of generations if a portion of their NG cost are actually below the TPC level and this mechanism should complement our recommended TPC setpoint reflective of a NG contract price for a longer period.</p>	<p>The CCGT LRMC¹ parameter accounts for the marginal cost of fuel for power generation which can be either the Spot LRMC or Term LRMC, whichever is higher depending on the prevailing spot gas and term gas prices. As a commonly-used price index for spot gas purchases in Singapore, the Japan Korea Marker ("JKM") index is appropriate for representing the cost of spot gas for power generation and in turn the prevailing Spot LRMC. Term gas prices for setting the Term LRMC component of CCGT LRMC will be calculated based on the weighted average gas prices in the term Gas Sale Agreements ("GSA") of the generation companies with supply contract duration of 1 year or longer.</p>
	Paragraph 22	<p>With a similar cap imposed on the Primary and Contingency Reserve prices at the ratio between the prevailing TPC and Energy Price Cap of \$4,500/MWh, the reserve participants would have a lowered incentive to opt in their loads for participation. In situations where the high volatility in USEP prices is due to supply constraints, increasing reserve activations is a lever to ease such constraints. However, with the lowered incentive for reserve participation, periods of supply constraints would be sustained instead. Therefore, we propose for the Primary and Contingency Reserve prices to remain as it is and to not take the ratio between the prevailing TPC and Energy Price Cap.</p>	<p>The adjustments are essential to maintain relativity in prices, and in turn convey the correct market price signals for prioritising the supply of different products/services required in the power system. Should the Primary and Contingency Reserve Price Caps (\$4,250/MWh and \$3,250/MWh respectively) not be correspondingly adjusted when the Temporary Price Cap ("TPC") mechanism is activated, this could lead to unintended changes in Gencos' bidding behaviour (e.g. bidding more into the reserves rather than energy) and in turn aggravate the system stress situation.</p>

¹ Refers to the Long Run Marginal Cost ("**LRMC**") of Combined Cycle Gas Turbines ("**CCGT**") generation units ("**CCGT LRMC**").

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Energy Market Company (“EMC”)	Section 9	<p>The Moving Average Price (“MAP”) used to determine TPC activation and de-activation in Sections 9 and 11 is unclear on which USEP to use for computation. Therefore, EMC would like to clarify whether the USEP used for MAP calculation is consistent for TPC activation and de-activation, which is to use <u>USEP unaffected by the TPC.</u></p>	<p>The Uniform Singapore Energy Price (“USEP”) for Moving Average Price (“MAP”) calculation for both TPC activation and de-activation will be based on the uncapped counterfactual USEP (i.e. “RUSEP” in the Final Determination Paper).</p>
	Section 13	<p>EMC understands that EMA intends to update the TPC bi-weekly to reflect the marginal fuel cost. To mitigate data transfer errors, EMC hopes to work with EMA to reflect the information accurately and promptly in the SWEM market systems.</p>	<p>We have noted your comments.</p>
ExxonMobil Asia Pacific Pte. Ltd.	Others	<p>ExxonMobil will like to understand if EMA have considered the long term potential implications on power prices due to the TPC mechanism.</p> <p>ExxonMobil will like to understand if EMA has decided the start and end date of the TPC, and what will be the signposts that EMA will be looking out for the continuation, amendment or termination of the TPC.</p> <p>The duration of the TPC needs to be considered carefully for its potential longer term impacts on new investment to ensure energy security.</p>	<p>The global energy crunch that started in 4Q 2021 has shown that extreme price volatility in the wholesale electricity market affects the functioning of the broader electricity market, to the detriment of market participants and consumers. The TPC is intended to be a permanent feature in the Singapore Wholesale Electricity Market (“SWEM”), acting as a guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy.</p> <p>The finalised TPC parameters were carefully calibrated to ensure that the TPC will continue to allow the wholesale electricity market to reflect market fundamentals. Given the uncertainty in future scenarios and taking into account the industry’s inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically updated based on the prevailing difference between the spot gas and term gas prices for the purpose of</p>

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			<p>determining the Spot LRMC and Term LRMC respectively.</p> <p>The TPC mechanism will be implemented with effect from 1 July 2023. To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>
	Page 3 Clauses 1a, 1b, 1c	ExxonMobil understands the rationale for EMA's action to address the volatility of the existing USEP. While the TPC may be a temporary measure, we believe that an approach that encourages investment and competition in the market place will be more sustainable in the longer term.	EMA will continue to encourage investment and competition in the energy market, notwithstanding the implementation of the TPC mechanism acting as a guardrail to timely restore the orderly functioning of the electricity market as and when needed.
	Pg 5, Clause 10 and Pg 6, Clause 13	Appreciate EMA's clarification whether the original (unadjusted) marginal energy offer price, which was impacted by the TPC within the affected 48 intervals, will be published.	EMA will publish both the actualised USEP that is subject to the TPC when activated as well as the counterfactual uncapped USEP.
HEXA Renewables SG Pte Ltd	Paragraph 7	While HEXA understands the need for market price stability, any of such price cap will distort the equilibrium of the longer term demand and supply dynamics of the SG electricity market. The proposed TPC will also dampen investment sentiments in renewable and new technologies while potentially disrupt SG's 2050 carbon neutral target and critical planning decisions. EMA should consider setting a time frame of no longer than 1 year for the proposed TPC.	<p>The global energy crunch that started in 4Q 2021 has shown that extreme price volatility in the wholesale electricity market affects the functioning of the broader electricity market, to the detriment of market participants and consumers. The TPC is intended to be a permanent feature in the SWEM, acting as a guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy.</p> <p>EMA will continue to encourage investment and competition in the energy market,</p>

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	Paragraph 22	Please confirm the value of the existing price caps for primary reserve, contingency reserve and regulation and these 3 caps will be adjusted based on the ratio of TPC/4500 during activation.	<p>notwithstanding the implementation of the TPC mechanism acting as a guardrail to timely restore the orderly functioning of the electricity market as and when needed.</p> <p>When the TPC is activated, the price cap for primary reserve, contingency reserve and regulation will be correspondingly adjusted proportionately to maintain the same ratio between the TPC and the \$4,500/MWh Energy Price Cap. Refer to EMA's final determination for more details.</p>
Keppel Energy Pte Ltd	Determination of MAP, MAPT, MTP	<p>While simulation results have shown that TPC activations are minimal from Jan-21 to Sep-22, the influence/impact of TPC were significantly downplayed given the frequent activation of DSS during the same period. Hence, the determination of MAP, MAPT, MTP and TPC may not represent a level that is equitable to the market.</p> <p>Further simulation must be carried out on the dataset without the influence of DSS to truly ascertain the significance of TPC with the proposed MAP, MAPT and MTP.</p> <p>Notwithstanding, under the jurisdiction scan, the Australia NEM appears to have greater semblance to NEMS. Hence, Keppel reckons that the determination window for MAP to be minimally 7 days, similar to the Australia NEM. In addition, Keppel proposes MTP to be set at 24 periods, which would have adequately covered peak hours, where elevated prices have statistically occurred.</p>	<p>The Directed Supply Scheme (“DSS”) and the TPC mechanism serve different purposes. The DSS is intended to guard against projected supply shortfall in the SWEM to ensure power system reliability while the TPC is intended to mitigate vicious cycles of extreme price volatility to restore orderly functioning of the market. The DSS has been institutionalised as a permanent feature to safeguard energy security. Accordingly, both the simulations for calibrating the TPC parameters and the actual TPC activations when implemented should be overlaid with concurrent DSS activations (if any) to ensure power system reliability.</p> <p>The parameters of the TPC mechanism should be contextualised to the needs of the individual market. In Australia, the 7-day MAP for their Cumulative Price Threshold (“CPT”) mechanism was designed primarily to mitigate volatility arising from extreme weather events such as droughts. As for Singapore, the TPC parameters are focused on mitigating vicious</p>

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			<p>cycles of price volatility and risk aversion as materialised during the global energy crunch.</p> <p>For Singapore, a MAP of 7 days (i.e. 336 trading periods) would not respond effectively to extreme USEP volatility. Refer to simulation results and assessment in the Final Determination Paper.</p> <p>System stress events leading to extreme and sustained volatility in the SWEM can occur at any time of the day, including non-peak hours. Hence, a Minimum Trigger Period (“MTP”) of 24 trading periods may not be adequate to cover peak hours.</p>
	Imposition/ lifting of TPC	<p>While the intent of the TPC is to mitigate extreme energy price volatility in the SWEM and prevent the vicious cycle of sustained volatility and risk aversion, and restore the orderly functioning of the market, there should be a principled approach to the activation and deactivation of the TPC regime.</p> <p>First, there should an explicit definition of what constitutes extreme price volatility. Hypothetically, in a period where prices in preceding months and years are largely depressed, TPC is punitive to the market as the MAPT is easily triggered when commodities prices are low. It appears to be counterproductive to have TPC in effect when market is already trading in sustained depressed levels.</p> <p>Inadvertently, having TPC as a permanent feature will compromise price signals and might financially cripple generation facilities given the current proposed levels of 1.5xCCGT LRMC is vastly inadequate to make up for the greater periods of poor showings (< CCGT LRMC).</p> <p>Keppel urges EMA to consider having a mechanism to determine episodes of extreme price volatility to impose/lift the TPC on a temporary basis. The TPC should not be a permanent feature of the market.</p>	<p>The TPC mechanism acts as a permanent guardrail in the SWEM to ensure that future price volatility events, such as that seen in Q4 2021, would be effectively mitigated to prevent vicious cycle of sustained volatility and risk aversion, and restore the orderly functioning of the market.</p> <p>To ensure that the Moving Average Price Trigger (“MAPT”)/TPC levels are adjusted timely to account for spot gas volatility, the Multiplier to the CCGT LRMC parameter will be automatically and systematically adjusted based on the Gas Spread, i.e. the difference between the prevailing JKM and term gas prices used to determine the Spot LRMC and Term LRMC respectively. With the dynamic Multiplier, during periods where the JKM and Term Gas price are similar on the back of normalisation of the JKM, a higher multiple of 3 times will be</p>

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			<p>applied to the CCGT LRMC, for both the MAPT and TPC level.</p> <p>To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>
	Level playing field	<p>TPC is currently determined at a multiplier of CCGT LRMC. However, generation facilities which are not baseload CCGTs are less efficient (compared to generation units shortlisted in the determination of vesting parameters) but can still be called upon during energy shortfall. Consequently, these marginal units will not be adequately compensated or incentivized to operate. Hence it is not equitable to cap prices for peaker plants while exempting providers of Demand Response when they play a similar role to provide supply/services that help rebalance the power system and normalize the market.</p> <p>Keppel urges EMA to consider equal treatment for both peaker plants and providers of Demand Response. Hence, providers of Demand Response should not be exempted from TPC.</p>	<p>The TPC is applied to all supply-side resources as extreme price volatility are due to supply-side factors such as higher and/or inadequate offers from the energy suppliers. The exclusion of demand-side resources such as DRs is intended to incentivise more demand-side participation which will in turn help to normalise the market and deactivate the TPC faster.</p> <p>Open Cycle Gas Turbines (“OCGTs”) will be able to seek compensation should they not be able to recover actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p>
	Definition, publication of TPC parameters	<p>The introduction of TPC brings on new variants of prices, triggers, and advisories. It is critical to have a clear distinction and definition for all these parameters to avoid any form of uncertainty.</p> <p>In addition, it is essential for publication of these parameters to the current price schedules (DPR, LAR and DAR) and advisories for greater price transparency.</p>	<p>We have noted your comments.</p> <p>Refer to Table 6 of the Final Determination Paper for the list of data to be published. EMA is supportive of more data being published as part of the Look Ahead Run (“LAR”) and Day Ahead Run (“DAR”), provided the data will not facilitate tactical bidding by energy suppliers to undermine market efficiency.</p>

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Market Surveillance and Compliance Panel (“MSCP”)	General	<p>The MSCP has no objection to the Temporary Price Cap (“TPC”) Mechanism as the TPC concept could lead to a more secure and reliable market and better outcomes for consumers. However, it is important to set the TPC design parameters appropriately in order to find the optimum balance between addressing short-term price volatility and long-term solutions needed to minimize extreme price volatility (e.g., attracting new investments). As the actual impact of the proposed TPC will be better understood only after its introduction, it may be useful for EMA to monitor the impact of the TPC on the industry and engage the stakeholders for suggestions on how to improve and modify the TPC mechanism when necessary. The MSCP also underlines the importance of ensuring that a mechanism for fair compensation is put in place under the TPC, so as to avoid having market participants withdraw their capacity if they are unable to recover their actual costs.</p>	<p>We have noted your comments. To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>
PacificLight Power Pte Ltd	General Principles	<p>We would like to highlight to the EMA that scarcity pricing is one of the key market mechanisms embedded in the energy-only market. It should be noted that (i) Gencos rely on it to recover losses or missing money incurred during downcycles which could last for years, and (ii) investors rely on it to gauge the need to build new generation planting moving forward. The price surge which started in Q4 2021 in Singapore was mainly driven by gas supply disruption, primarily on the PNG side. Since the implementation of pre-emptive measures such as the Standby LNG Facility (SLF) and thereafter the Direct Supply Scheme (DSS), electricity prices have started to normalise. The USEP, expressed as a ratio over the quarterly vesting price, dropped from 1.9 in Q1 2022 to 1.1 in Q4 2022 mainly because of the measures. PLP would advocate that the proposed temporary price cap scheme should not distort the market to the extent that Gencos are not able to recover losses from downcycles and future investors are discouraged to make power generation investments. We hope the EMA can agree that on a long-run basis, Gencos should be allowed to recover the LPMC. As well, due to the cyclical nature of the business, this would likely materialise when Gencos earn 1.5x LPMC in the upcycles and 0.5 LPMC in the downcycles. <u>It is on this basis that PLP would propose to set the trigger for Temporary Price Cap to be activated when the past twelve months’ average USEP is higher than 1.5 times the Vesting LPMC. This is to ensure that short-term measures do not affect the long-term desirable outcome.</u></p>	<p>The global energy crunch that started in 4Q 2021 has shown that extreme price volatility in the wholesale electricity market affects the functioning of the broader electricity market, to the detriment of market participants and consumers. The TPC is intended to be a permanent feature in the SWEM, acting as a guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy.</p> <p>A MAP of 12 months as suggested by PacificLight Power will not meet the objectives of the TPC mechanism to mitigate extreme price volatility and risk aversion, as seen during the global energy crisis.</p> <p>EMA has carefully calibrated the finalised TPC parameters to ensure that the TPC will continue to allow the wholesale electricity market to</p>

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			<p>reflect market fundamentals. Given the uncertainty in future scenarios and taking into account the industry's inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices. As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p>
	<p>Benchmarking</p>	<p>The paper draws reference to similar price cap imposition in other jurisdictions such as in Australia, the Philippines and Texas. Below is a summary of recent developments in the respective markets:</p> <p>a. The Philippine Energy Regulatory Commission (ERC) chief admitted that the price signals become distorted with the presence of a secondary price cap. The regulatory body is also currently reviewing the possibility of adjusting upwards the secondary price cap of the Wholesale Electricity Spot Market (WESM) as existing rates could no longer support the warranted return on investments.</p> <p>b. The Australian Energy Market Operator (AEMO) has doubled the temporary price cap from AUD300/MWh to AUD600/MWh with effect from January 2023, which makes its TPC very close to its MAPT of AUD693.51/MWh.</p> <p>When developing TPC in Singapore, we would request that the EMA consider the contextual differences with other jurisdictions, particularly fuel mix in the respective reference countries:</p> <p>a. around 40% of electricity produced in the Philippines is from coal; b. around 25% of electricity produced in Australia is from renewables.</p>	<p>The parameters of the TPC mechanism should be contextualised to the needs of the individual market. For Singapore, EMA has carefully calibrated the finalised TPC parameters to ensure that the TPC will continue to allow the wholesale electricity market to reflect market fundamentals and prevailing market conditions. With the industry's inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices. As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p> <p>To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC</p>

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		<p>With significant coal and locally generated renewables in their fuel mix, the average fuel cost to supply electricity is substantially lower in these jurisdictions.</p> <p>On the basis that 95% of electricity in Singapore is produced from natural gas, the cap should recognise the higher generation costs that occur in the Singapore market.</p>	<p>parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>																												
	Simulation	<p>Since DSS prices were used in the selected periods as the MAPT in the simulation, the MAPT presented in the paper was as high as S\$800/MWh – S\$1200/MWh. It therefore underestimates the impact of the scheme on the market.</p> <p>PLP have re-run the simulation based on the assumption that the Spot LRMIC is lower than the Vesting LRMIC, which would likely be the case once the current geopolitical issues are resolved (in fact, recent JKM prices have dropped to around US\$15/mmBtu). The results are presented below.</p> <table border="1" data-bbox="613 746 1509 1018"> <thead> <tr> <th>Scenario</th> <th>No of Activation</th> <th>No of TPs</th> <th>% of TPs</th> <th>TPs capped at TPC</th> <th>% of TPs</th> <th>Average % reduction in USEP due to TPC</th> </tr> </thead> <tbody> <tr> <td>S1</td> <td>134</td> <td>7,920</td> <td>26%</td> <td>4,558</td> <td>15%</td> <td>26%</td> </tr> <tr> <td>S2</td> <td>98</td> <td>4,251</td> <td>14%</td> <td>2,820</td> <td>9%</td> <td>21%</td> </tr> <tr> <td>S3</td> <td>28</td> <td>4,283</td> <td>14%</td> <td>2,435</td> <td>8%</td> <td>17%</td> </tr> </tbody> </table> <p>Under this analysis, the TPC under Scenario 2 will kick in 14% of the time, with an impact of reducing the USEP by 21%. This is significantly higher than the 3.6% activation and 7.8% impact on the price presented in the paper.</p>	Scenario	No of Activation	No of TPs	% of TPs	TPs capped at TPC	% of TPs	Average % reduction in USEP due to TPC	S1	134	7,920	26%	4,558	15%	26%	S2	98	4,251	14%	2,820	9%	21%	S3	28	4,283	14%	2,435	8%	17%	<p>The DSS and the TPC mechanism serve different purposes. The DSS is intended to guard against projected supply shortfall in the SWEM to ensure power system reliability while the TPC is intended to mitigate vicious cycles of extreme price volatility to restore orderly functioning of the market. The DSS has been institutionalised as a permanent feature to safeguard energy security. Accordingly, both the simulations for calibrating the TPC parameters and the actual TPC activations when implemented should be overlaid with concurrent DSS activations (if any) to ensure power system reliability.</p> <p>EMA notes the concerns of the impact of declining JKM prices on the MAPT. To ensure that the MAPT/TPC levels will be adjusted timely to account for spot gas volatility, the Multiplier to the CCGT LRMIC parameter will be automatically and systematically adjusted based on the Gas Spread between the JKM and term gas prices used to determine the Spot LRMIC and Term LRMIC respectively. Refer to the Final Determination Paper for the simulation results in respect of the dynamic Multiplier to the CCGT LRMIC parameter for setting the MAPT and TPC.</p>
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	Level of TPC, MAP and MAPT	<p>As mentioned in the paper, any transient volatility that is attributed to a tighter supply cushion on account of higher demand or lower supply should be allowed in the market. This shall include any forced outage or unplanned outage of the units which typically takes up to 3 days to identify the root cause and have it rectified as well to obtain the clearance from PSO. On this basis, we would propose that the MAP be calculated at least across 3 days.</p> <p>Assuming the MAP is on a 3-day rolling basis, we have run the simulation on the assumption that the TPC and MAPT are both set at 3 times of Vesting LRMC, which is aligned with the Australian market where its TPC and MAPT is almost 1:1 ratio.</p> <table border="1" data-bbox="611 571 1529 751"> <thead> <tr> <th>Scenario</th> <th>No of Activation</th> <th>No of TPs</th> <th>% of TPs</th> <th>TPs capped at TPC</th> <th>% of TPs</th> <th>Average % reduction in USEP due to TPC</th> </tr> </thead> <tbody> <tr> <td>S4</td> <td>22</td> <td>1,650</td> <td>5.4%</td> <td>546</td> <td>2%</td> <td>8.5%</td> </tr> </tbody> </table> <p>Under this scenario, 5.4% of the time TPC will kick in with an estimated impact of 8.5% reduction in prices, which is around the same level deemed acceptable in the paper.</p> <p>Therefore, we propose to set both the TPC and MAPT to 2x Spot LRMC, with a floor of 3x Vesting LRMC.</p>	Scenario	No of Activation	No of TPs	% of TPs	TPs capped at TPC	% of TPs	Average % reduction in USEP due to TPC	S4	22	1,650	5.4%	546	2%	8.5%	<p>There is no basis to align the MAP to the typical duration in which the Power System Operator (“PSO”) reviews to allow a generation unit to return to service after undergoing a forced outage. Moreover, a MAP of 3-7 days would not have responded effectively to extreme USEP volatility, which would translate to the USEP remaining volatile for 3-7 days and result in adverse impact to the SWEM as observed in 2H 2021. Refer to the Final Determination Paper for EMA’s simulations and assessment.</p> <p>Taking into account the industry’s inputs, EMA has refined the TPC and MAPT to be both set using the same dynamic Multiplier on the CCGT LRMC. The dynamic Multiplier is such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices used to determine the Spot LRMC and Term LRMC respectively.</p>
Scenario	No of Activation	No of TPs	% of TPs	TPs capped at TPC	% of TPs	Average % reduction in USEP due to TPC											
S4	22	1,650	5.4%	546	2%	8.5%											
	Off-Trigger	We propose to remove the off-trigger mechanisms as we don’t believe there is any significance to setting it. The price cap is being imposed only for settlement purposes and is not affecting any parameters used for market clearing.	The Off-Trigger provides clarity to the market as to when the TPC, after activation, will be deactivated. Market-clearing will continue to be based on all energy suppliers submitting offer prices for energy, reserves and regulation up to the respective price cap as per today.														
	Adjustment to the Price Caps for Reserves and Regulation	We understand that the price cap is being imposed only for settlement purposes. There’s no change to the operation of the market clearing engine, therefore there isn’t a need to adjust the reserve and regulation prices, especially the reserve price is a zero-sum game among the Gencos.	The adjustments are essential to maintain relativity in prices, and in turn convey the correct market price signals for prioritising the supply of different products/services required in the														

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		Nonetheless, if the EMA decides to adjust the reserve and regulation prices, PLP would propose to adopt the Australian mechanism where the reserve price is being capped at the TPC price. This approach is logical as it reflects the opportunity cost of providing in the energy market (i.e., equitable reward for forgoing to generate and providing reserve).	power system. Should the Primary and Contingency Reserve Price Caps (\$4,250/MWh and \$3,250/MWh respectively) not be correspondingly adjusted when TPC is activated, this could lead to unintended changes in Market Participants (“MPs”)’ bidding behaviour (e.g. bidding more into the reserves rather than energy) and aggravate the system stress situation.
	Treatment for Demand Responses	PLP would propose the suspension of the Demand Response scheme once the TPC comes into effect as no additional value is provided by the Demand Response participants.	The exemption of the DRs from the TPC mechanism is intended to incentivise DR participation and faster off-triggering of the TPC.
	Market Information	We understand that EMC will be required to publish real-time information and advisory notices when TPC is activated or de-activated. PLP would like to highlight that during incidences of TPC activation, the final price should be published for settlement purposes. In addition, we recommend that the industry be consulted when developing the parameters and guidelines of the publication notice.	Refer to Table 6 of the Final Determination Paper for the list of data to be published in the first instance. EMA is supportive of more data being published as part of the LAR and DAR, provided the data will not facilitate tactical bidding by energy suppliers to undermine market efficiency.
	Timeline	The TPC scheme is a significant modification to our energy-only market, with potentially far reaching and lasting impact to both existing and future investors in the Singapore power sector. As such, we strongly urge for the EMA to conduct additional analysis and a more comprehensive review of the proposed scheme in consultation with the industry before it is implemented.	EMA has carefully considered all the industry comments to make the appropriate refinements to the design and parameters of the TPC mechanism, as detailed in the Final Determination Paper and our responses to the comments.
Sembcorp Cogen	Section: Overall Design Intent and Framework Paragraph 9	<p>Policy should minimize interference in the normal functioning of the market; for example, when prices are a consequence of higher demand.</p> <p>If policy intent of temporary price cap (TPC) is to arrest extreme price volatility, the price volatility trigger (PVT) should be based on measures of volatility (e.g., standard deviation) instead of price. Under current design of price volatility</p>	The global energy crunch that started in 4Q 2021 has shown that extreme price volatility in the wholesale electricity market affects the functioning of the broader electricity market, to the detriment of market participants and consumers. The TPC is intended to be a permanent feature in the SWEM, acting as a

Stakeholder	Section/Paragraph	Comments	Responses
		<p>trigger (PVT), temporary price cap (TPC) would be triggered even if prices are stable and reflect prevailing demand and supply conditions. An illustration:</p> <ul style="list-style-type: none"> • For simplicity, assuming USEP clears consistently at \$320 over the specified time periods (48 periods in the current proposal), Moving Average Price (MAP) would be \$320. • If Moving Average Price Threshold (MAPT) is currently \$306, TPC would be activated, even though prices have been stable and reflect market conditions. 	<p>guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy.</p> <p>The overall TPC mechanism is designed such that the TPC is activated based on the two key parameters, viz. the MAP and MAPT working collectively. EMA has calibrated these parameters by benchmarking against the USEP SD as observed in periods where significant risk aversion behaviour was observed. This approach allows the TPC mechanism to automatically and systematically kick-in to mitigate similar levels of extreme USEP volatility that was shown to lead to a vicious cycle of risk aversion and USEP volatility which disrupted the orderly functioning of the electricity market.</p>
	<p>Section: Level of TPC Paragraph: 13</p> <p>Section: PVT Paragraph: 20</p>	<p>SembCogen would like to propose to set TPC at the higher of 3X Vesting LRM and 2X Spot LRM. The TPC should not overly encumber the functioning of the market mechanism to signal more supply to enter the market in order to curb market volatility.</p> <p>SembCogen would like to propose to set MAPT at the higher of 3X Vesting LRM and 2X Spot LRM, and MAP at 144 TPs (equivalent to a rolling 3-day average) The proposed PVT would still result in reduction of the price and SD of USEP with less interference to the market.</p> <p>Plants with higher heat rate (eg OCGT) or higher gas cost may be disincentivized to enter the market if the potential revenue is reduced due to TPC.</p>	<p>EMA has carefully designed and set the parameters of the TPC mechanism to ensure that it will continue to allow the wholesale electricity market to reflect market fundamentals and prevailing market conditions. In particular, with the industry's inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRM based on the prevailing difference between the spot gas and term gas prices.</p> <p>A MAP of 144 TPs (or 3 days) would not be effective in mitigating extreme USEP volatility.</p>

Stakeholder	Section/Paragraph	Comments	Responses
			<p>Refer to EMA's simulation results and assessment in the Final Determination Paper.</p> <p>As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p> <p>To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>
	Section: Off-Trigger Paragraph: 21	SembCogen propose that MTP to be 24 TPs which would cover the higher priced Peak periods until the end of the day. The reduction of MTP to 24 TP from 48 TP is unlikely to have material impact to the reduction in USEP.	System stress events leading to extreme and sustained volatility in the SWEM can occur at any time of the day, including non-peak hours. Hence, a MTP of 24 trading periods may not be adequate to cover peak hours. A MTP of 48 TPs is therefore needed to provide adequate time for the market to stabilise and prevent the Energy Price Cap from oscillating between the TPC and \$4,500/MWh intra-day.
	Other Comments	<p>Having both DSS scheme and TPC scheme concurrently may be excessive and may undermine the competitive nature of the SWEM. SembCogen would propose, should TPC be implemented, TPC should replace DSS.</p> <p>While guardrails may be necessary during times of crisis, excessive interventions even after the energy market stabilizes would deter new entrants into the market. EMA should outline key considerations that would trigger the removal of the guard rails.</p>	The DSS and the TPC mechanism serve different purposes. The DSS is intended to guard against projected supply shortfall in the SWEM to ensure power system reliability while the TPC is intended to mitigate vicious cycles of extreme price volatility to restore orderly functioning of the market. The DSS has been institutionalised as a permanent feature to safeguard energy security. Accordingly, TPC should be overlayed with concurrent DSS activations (if any) to ensure power system reliability.

Stakeholder	Section/Paragraph	Comments	Responses												
<p>Senoko Energy Pte Ltd</p>	<p>1.a. Overall Comments</p>	<p>With the average wholesale electricity prices based on the past 3-6 months not being reflective of the cost of gas a Genco needs to procure from the open market, many large consumers today are unwilling to enter into long term electricity contracts. Since the introduction of the directed supply scheme (DSS) in 1Q22, much of the market's price volatility has been reduced. We can observe that the ratio of USEP to vesting price have been reduced from 1.93 in 1Q22 to 1.57 in Q2-22 to Q3-22 and with the TPC in place, it is expected that price volatility in the market will be reduced further. While it gives consumers additional protection and safeguards, this also incentivises consumers to remain on pool given the lower price risks, worsening Gencos' ability to procure gas should global gas prices remain high. To avoid further divergence between the wholesale electricity price and global gas prices, Senoko is of the view that the TPC should be in place only when there is sustained high energy prices over a longer period. When the cost of gas procurement is at a level that is reflective of wholesale electricity prices, it will discourage consumers from remaining on pool, allowing generators to improve their respective gas portfolios and over on a longer-term period, reduce the need for EMA's other pre-emptive measures such as DSS. Hence, Senoko will like to propose for:</p> <table border="1" data-bbox="613 810 1525 1086"> <thead> <tr> <th></th> <th>MAPT</th> <th>Averaging Period for MAP</th> <th>TPC</th> </tr> </thead> <tbody> <tr> <td>EMA</td> <td>2 x CCGT LRMC</td> <td>48</td> <td>1.5 x CCGT LRMC</td> </tr> <tr> <td>Senoko</td> <td>Higher of: 3x Vesting LRMC or 2 x Spot LRMC</td> <td>144</td> <td>Higher of: 3x Vesting LRMC or 2 x Spot LRMC</td> </tr> </tbody> </table> <p>Senoko would like EMA to consider the proposed change as it will not only achieve the objective of avoiding wholesale electricity prices being elevated over a long period that is unreflective of gas procurement prices but also allow the market to function normally where gas procurement, wholesale electricity price and retail contracting is at an equilibrium.</p>		MAPT	Averaging Period for MAP	TPC	EMA	2 x CCGT LRMC	48	1.5 x CCGT LRMC	Senoko	Higher of: 3x Vesting LRMC or 2 x Spot LRMC	144	Higher of: 3x Vesting LRMC or 2 x Spot LRMC	<p>EMA has carefully designed and set the parameters of the TPC mechanism to ensure that it will continue to allow the wholesale electricity market to reflect market fundamentals and prevailing market conditions. In particular, with the industry's inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices.</p> <p>A MAP of 144 TPs (or 3 days) would not be effective in mitigating extreme USEP volatility. Refer to EMA's simulation results and assessment in the Final Determination Paper.</p> <p>As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p> <p>To ensure the TPC parameters remain fit for purpose, EMA intends to review the TPC parameters in consultation with industry by 3Q 2025, after collecting 2 years of operational data.</p>
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	<p>15 ".... The MAP and MAPT will be</p>	<p>Senoko agrees with EMA that the TPC should be calibrated to avoid activating the TPC for isolated and short system stress event such as tripping of a generation unit as it is part of a normal and functioning market. This will protect</p>	<p>There is no basis to align the MAP (a) with other jurisdictions or (b) to the typical duration for PSO to review and allow a generation unit to</p>												

Stakeholder	Section/Paragraph	Comments	Responses																											
	calibrated to avoid activating the TPC for relatively isolated and short system stress events, such as the tripping of a generation unit resulting in a transient increase in USEP volatility which is part of the normal functioning of the SWEM to signal the need for more supply and/or demand response to re-balance the power system “	consumers from sustained high prices but also allow certain volatility to the market and avoid consumers from staying on wholesale electricity price plans. Computing the PVT using the moving average price of 48 periods would potentially overstate the reality of more recent high prices and not taking into consideration the lower prices that consumers enjoyed during the days / periods leading up to a high price period. In addition, as part of the process of a generation unit tripping, it will typically take approximately 3-7 days for the unit to be fixed and obtain the necessary approval from the PSO for synchronisation. <u>Hence, we are proposing for a MAP of 144 periods where it considers a larger snapshot of energy prices. This is also in line with market in Australia and Philippines where MAP is computed over 7 days and 3 days respectively.</u>	return to service following a forced outage. For instance, the Australia TPC was designed to mitigate USEP volatility arising from extreme weather events (e.g., droughts, heatwaves), which is why the MAP is 7 days, but this is not the case in Singapore. For Singapore, a TPC mechanism with MAP of 3-7 days would not respond timely or effectively against extreme USEP volatility, and result in adverse impact to the SWEM as observed in H2 2021. Refer to EMA’s simulation results and assessment in the Final Determination Paper.																											
	16. Multiple to Vesting LRM for MAPT and TPC parameters	<p>With spot gas prices being historically low for a substantial period and being high only in the last two years, Senoko did a simulation on the impact of TPC where spot gas LRM is lower than the vesting LRM whilst maintaining EMA’s proposed parameters.</p> <table border="1" data-bbox="611 1015 1536 1145"> <thead> <tr> <th>TPC</th> <th>MAP</th> <th>MAPT</th> <th>No of Activation</th> <th>No of TPs</th> <th>% of TPs</th> <th>TPs capped at TPC</th> <th>% of TPs</th> <th>Average % reduction in USEP due to TPC</th> </tr> </thead> <tbody> <tr> <td>1.5 x</td> <td>48 periods</td> <td>2.0 x</td> <td>98</td> <td>4,218</td> <td>13.8%</td> <td>2,792</td> <td>9.1%</td> <td>21.1%</td> </tr> <tr> <td>3.0 x</td> <td>144 periods</td> <td>3.0 x</td> <td>22</td> <td>1,650</td> <td>5.4%</td> <td>546</td> <td>1.8%</td> <td>8.5%</td> </tr> </tbody> </table> <p>Our results show that should spot LRM trend lower than vesting LRM in the future, EMA’s current proposed parameters will activate TPC for 13.8% of the time as compared to the indicated 3.6% of the time.</p> <p>Resultingly, USEP will be reduced by about 20% for the corresponding periods which will further distort market prices and signals. Such distortions will have flow on impacts such as:</p>	TPC	MAP	MAPT	No of Activation	No of TPs	% of TPs	TPs capped at TPC	% of TPs	Average % reduction in USEP due to TPC	1.5 x	48 periods	2.0 x	98	4,218	13.8%	2,792	9.1%	21.1%	3.0 x	144 periods	3.0 x	22	1,650	5.4%	546	1.8%	8.5%	EMA noted Gencos’ concerns on the impact of falling spot gas prices on the MAPT and TPC level, and in turn, market outcomes. To ensure that the MAPT/TPC levels will be adjusted timely to account for spot gas volatility, the Multiplier to the CCGT LRM will be automatically and systematically adjusted based on the Gas Spread between the JKM and term gas prices used to determine the Spot LRM and Term LRM respectively.
TPC	MAP	MAPT	No of Activation	No of TPs	% of TPs	TPs capped at TPC	% of TPs	Average % reduction in USEP due to TPC																						
1.5 x	48 periods	2.0 x	98	4,218	13.8%	2,792	9.1%	21.1%																						
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Stakeholder	Section/Paragraph	Comments	Responses
		<ul style="list-style-type: none"> - Reducing the commercial viability for OCGTs - Loosening contracting strategies for Retailers given the lower price risks - Reduction of ROIs or weakens business cases for BESS / PV - Dissuades new planting leading to an increased reliance on EMA's initiatives to solve capacity constraints <p>Hence, our view is that there is a need for the multiple of vesting LRMC in the calculation of MAP and MAPT parameter to be higher. Senoko proposes for the multiple of vesting LRMC applicable for MAP and MAPT to be set at 3 times vesting price. As shown in the table above this will avoid frequent activation of the TPC when spot gas prices correct and instead activates TPC 5.4% of time as per the TPC proposal's intention.</p>	
	<p>14. Should any energy supplier in the SWEM be dispatched to supply energy when the TPC is in place and is unable to recover its actual costs of supply, it will be allowed to seek compensation under the Market Rules.</p>	<p>Generators that are unable to recover its actual cost when TPC is in place should also be allowed a reasonable return for the loss in revenue.</p> <p>Our view is that this should be pegged to <u>vesting margin</u>.</p>	<p>Any compensation in relation to the TPC mechanism should be aligned with that for the DSS. EMA will separately develop a fair and reasonable compensation framework that covers actual cost of supply including reasonable margins. EMA will consult industry on the compensation framework in due course.</p>
	<p>21. To provide adequate time for the market to stabilise and prevent the Energy Price Cap from oscillating between</p>	<p>We are requesting that the MTP be reduced to 24 trading periods instead. Our view is that 12 hours would provide ample time for the market to readjust and stabilise.</p>	<p>System stress events leading to extreme and sustained volatility in the SWEM can occur at any time of the day, including non-peak hours. A MTP of 48 TPs is therefore needed to provide adequate time for the market to stabilise and prevent the Energy Price Cap from oscillating between the TPC and \$4,500/MWh intra-day.</p>

Stakeholder	Section/Paragraph	Comments	Responses
	<p>the TPC and \$4,500/MWh intra-day, the TPC once activated should be in place for a Minimum Trigger Period ("MTP") of 48 consecutive TPs including the first TP of activation.</p>		
	<p>22. The TPC when activated should not be applied to the Demand Response Scheme so as to encourage demand response providers to continue to offer their services which will help to normalise the market and facilitate deactivation of the TPC.</p>	<p>On the same note, our view is that the TPC should also not be applicable to OCGTs. OCGTs in the system do not run frequently and would require such events of scarcity pricing to cover their LRMCs.</p> <p>Secondly, OCGTs provide larger volumes of energy almost instantaneously and are able to ramp up or down their generation levels as the system requires. OCGTs are also able to maintain their load output for much longer period of time and hence, we believe that OCGT energy is much more valuable in times of energy shortfalls as compared to Demand Response provision.</p>	<p>The TPC is applied to the supply-side as the extreme price volatility are due to supply-side factors such as higher and/or inadequate offers from energy suppliers.</p> <p>The exclusion of demand-side resources such as DRs is intended to incentivise more demand-side participation and in turn normalise the market to deactivate the TPC faster.</p> <p>OCGTs can seek compensation under the Market Rules should they be dispatched and are unable to recover actual cost of supply due to the USEP being capped.</p>
	<p>5. However, during recent periods of extreme USEP volatility, instead of inducing more electricity supply, Gencos were</p>	<p>Senoko does not believe that the observation of Gencos withholding capacity is accurate. While Gencos maintain spare generation capacity to mitigate risk for unanticipated outages, it is also unlikely for the Genco to procure gas more than its contractual load. The plants however remain available to meet system shortfall when required. EMA has since introduced DSS which comes with the corresponding gas to allow these spare units which was previously unable to respond to periods of shortfall/extreme USEP.</p>	<p>We note Senoko's comment that Gencos maintain spare generation capacity to mitigate risk of their own unanticipated outages. With the TPC mechanism, gencos should be more amenable to maintain less spare capacity and correspondingly contract for more gas and retail load.</p>

Stakeholder	Section/Paragraph	Comments	Responses
	<p>observed to reduce supply to preserve spare generation capacity to serve their contractual demand should their generation units experience unanticipated outages or gas supply disruptions.</p>		
	<p>6. Independent Retailers (“IRs”) were especially affected by the extreme price volatility in the SWEM. Since 4Q 2021, six IRs had exited the market as they were no longer able to sustain their operations. Consumers faced difficulties securing electricity contracts, especially those who used to buy directly from the SWEM.</p>	<p>It would be worth noting that the exit of IRs has to do with their respective contracting strategies. IRs knowingly under-hedged their contract positions as they had been enjoying low USEP prices historically. Hence, it is a calculated risk that IRs chose to accept, and we should not link volatile USEP to their exit but instead their risk appetite to their exit.</p>	<p>When activated in times of extreme price volatility, the TPC will mitigate excessive risks to all SWEM participants including gencos, retailers and consumers buying from the SWEM, while still allowing the USEP to fluctuate and reflect demand and supply conditions. EMA will additionally institute a tighter regulatory regime to enhance the resiliency of all retailers against market volatility.</p>
	<p>Other comments</p>	<p>EMA/EMC to ensure transparency of all necessary information on a reasonably real-time basis including the on-trigger and off-trigger price signals and</p>	<p>EMC will publish the data as detailed in Table 6 of the Final Determination Paper.</p>

Stakeholder	Section/Paragraph	Comments	Responses
Shell Eastern Petroleum Pte Ltd		calculations (including price sets) being made accessible to all market participants.	
	Other comments	EMA/EMC to ensure transparency of the information and methodology used in the calculation of the LRMC in terms of setting the Price Cap, including the bi-weekly determination of the fuel price, and make them accessible to all market participants.	Refer to Appendix 3 of the Final Determination Paper on the methodology for calculating the Spot LRMC and Term LRMC.
	Other comments	We would like to clarify if this mechanism is going to be permanent or a temporary solution subject to evaluation prior to any extension. If the latter, we would like to understand the initial period this mechanism is intended to be implemented for and how EMA/EMC plan to evaluate this mechanism.	The TPC is intended to be a permanent feature in the SWEM, acting as a guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy.
	“Should any energy supplier in the SWEM be dispatched to supply energy when the TPC is in place and is unable to recover its actual costs of supply, it will be allowed to seek compensation under the Market Rules.”	To seek more clarity on what constitutes “actual costs”; if these costs would be passed on to consumers, and if yes, how.	EMA will separately develop a fair and reasonable compensation framework that covers actual cost of supply including reasonable margins. EMA will consult industry on the compensation framework in due course.
Tuas Power Generation Pte. Ltd.	Para 13	The TPC should be set to at least the higher of 3 times the Vesting LRMC or 2 times the Spot LRMC instead of 1.5 times the CCGT LRMC as too low a TPC would negatively impact decisions to keep standby units which would be negative for system security as well as for new planting.	EMA has carefully designed and set the parameters of the TPC mechanism to ensure that it will continue to allow the wholesale electricity market to reflect market fundamentals and prevailing market conditions. In particular, with the industry’s inputs, EMA has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be

Stakeholder	Section/Paragraph	Comments	Responses
			<p>automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices.</p> <p>As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p>
	Para 14	Compensation should include not just running costs but also capital costs which include a reasonable return on capital.	EMA will separately develop a fair and reasonable compensation framework that covers actual cost of supply including reasonable margins. EMA will consult industry on the compensation framework in due course.
	Para 20	The application of a Temporary Price Cap (“TPC”) should be implemented in as light-handed a manner as possible to minimise negative impact on investor sentiment. EMA has already implemented the Directed Standby Liquefied Natural Gas Facility Scheme (“DSS”) which already serves to mitigate price volatility. Note that DSS was only implemented in late Dec 2021 in response to market volatility in Q4 2021 and would have further reduced market volatility in the time period analysed by EMA if had been implemented earlier. In light of the above, EMA should consider an averaging period of 336 trading periods instead or at the very least 5 days (240 trading periods) similar to when Philippines first implemented its secondary price cap. If the averaging period is to be set at 48 periods, then DSS should be removed to avoid excessive intervention.	<p>The DSS and the TPC mechanism serve different purposes. The DSS is intended to guard against projected supply shortfall in the SWEM to ensure power system reliability while the TPC is intended to mitigate vicious cycles of extreme price volatility to restore orderly functioning of the market. DSS has been institutionalised as a permanent feature to safeguard energy security. Accordingly, TPC activations should be overlaid with concurrent DSS activations (if any) to ensure power system reliability.</p> <p>A TPC mechanism with MAP of 3 or more days would not respond timely or effectively against extreme USEP volatility, and result in adverse impact to the SWEM as observed in H2 2021. Refer to EMA’s simulation results and assessment in the Final Determination Paper.</p>

Stakeholder	Section/Paragraph	Comments	Responses
	Para 20	The MAPT should also be set to at least the higher of 3 times the Vesting LRMC or 2 times the Spot LRMC of combined cycle gas turbine (“CCGT”) generation units instead of 2 times the CCGT LRMC in line with the higher TPC that has been counter-proposed for the comment with respect to Para 13. A light-handed approach would minimise negative impact on investor sentiment with respect to retaining standby units which contribute to system security as well as new planting.	<p>EMA noted Gencos’ concerns on the impact of falling JKM on the MAPT and the TPC level, and has refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMC based on the prevailing difference between the spot gas and term gas prices.</p> <p>As an additional safeguard, energy suppliers will be allowed to seek compensation should they be unable to recover the actual cost of supply when dispatched during TPs with USEP being capped at the TPC.</p>
	-	As the TPC would cap prices, it would reduce the returns for generation facilities kept as standby units and peaking plants thereby reducing the economic lifetime of such generation facilities. In light of this, to avoid penalising gencos whose generation facilities have reduced economic lifetimes such that there is less than five years of remaining economic lifetime left arising from the implementation of the TPC but had not yet notified retirement as remaining economic lifetime was 5 years or more before the implementation of the TPC, if the TPC is implemented, there should be a six month period (to provide reasonable time for reassessing remaining economic lifetime) after implementation during which generation facilities are allowed to provide less than five years notice for retirement or if not allowed to retire with less than five years notice as per requested retirement date, then be compensated for the costs of maintaining those units beyond the requested retirement date.	The 5-year notice period for plant retirement is intended to facilitate orderly entry and exit of generation capacity. With the introduction of the TPC, older and less efficient generation units may seek compensation should they not be able to recover actual cost of supply when dispatched during TPC activations with the USEP capped at the TPC.
YTL PowerSeraya Pte Limited	Paragraph 14	It is stated that any energy supplier that is unable to recover its actual costs of supply when the TPC is in place is allowed to seek compensation under the Market Rule. We would like to seek clarification on the definition of “actual costs of supply” that an energy supplier is allowed to seek compensation. There should be different compensation amount for a baseload plant and a peaking plant as shown below:	Any compensation in relation to the TPC mechanism should be aligned with that for the DSS. EMA will separately develop a fair and reasonable compensation framework that covers actual cost of supply including reasonable margins. EMA will consult industry on the compensation framework in due course.

Stakeholder	Section/Paragraph	Comments	Responses
		<p>i) For combined cycle gas turbine (“CCGT”) baseload generation units, the Genco must be compensated for the actual fuel cost + reserve cost incurred + EMC charges + non-fuel margin under the vesting contract;</p> <p>ii) For open cycle gas turbine (“OCGT”) peaking generation units, the Gencos must be compensated for the actual fuel cost + reserve cost incurred + EMC charges + fixed margin determined based on the annual cost with reasonable rate of return divided by the historical MWh generated in the preceding year.</p>	
	Paragraph 13	Similar to the Australia National Electricity Market (“NEM”), the TPC should be set at the same level as the MAPT.	The Australian market’s TPC and MAPT are not designed to be symmetrical. The TPC and MAPT were originally AUD300/MWh and ~AUD693.5/MWh respectively. The TPC level was temporarily raised to AUD600/MWh from 1 Dec 22 to 30 Jun 25 to cover rising fuel costs due to the global energy crisis.
	Paragraph 16	<p>Based on our internal assessment, during the period from Jan 2021 to Sep 2022, the Spot LRMV has been higher than the term gas price under the vesting contract. As such, the simulation results carried out by EMA is effectively setting the TPC at 2 x the Spot LRMV. The equivalent level for 2 x Spot LRMV is at 3 x Vesting LRMV. As such, to ensure that the simulation results remains relevant in the future when Spot LRMV is lower than Vesting LRMV, the MAPT shall be set at the higher of a) 2 x Spot LRMV and b) 3 x Vesting LRMV. For example:</p> <p>USEP on 20 Feb 2023 is \$566.11/MWh DSS Price for 16 Feb 2023 to 28 Feb 2023 is \$248.74/MWh Vesting LRMV Price for Q1 2023 is \$204.44/MWh</p> <p>TPC will be triggered on 20 Feb 2023 if 2 times of Vesting LRMV Price is being adopted. The triggering of TPC on 20 Feb 2023 is not required. As such, 3 x Vesting LRMV will be a more appropriate MAPT to avoid unnecessary triggering of TPC.</p>	<p>The CCGT LRMV, which is used to set the TPC and MAPT, is set at the higher of the Vesting LRMV or Spot LRMV to account for the prevailing marginal cost of fuel for power generation.</p> <p>EMA noted Gencos’ concerns on the impact of falling spot gas prices on the MAPT and TPC level. To ensure that the MAPT/TPC level are adjusted timely to account for spot gas volatility, we have refined the design of the TPC mechanism by introducing a dynamic Multiplier such that it will be automatically and systematically adjusted between 1.5 times and 3 times CCGT LRMV based on the prevailing difference between the spot gas and term gas prices.</p>

Stakeholder	Section/Paragraph	Comments	Responses
		<p>During the briefing conducted by EMA/EMC for this consultation paper on 07 Feb 2023, it was mentioned that the DSS Price will be used as a proxy of the JKM Price. We would like to request EMA to share the methodology on how the bi-monthly DSS Price is being determined. The Spot LRMC shall be based on publicly available published Japan-Korea Marker (“JKM”) prices that Gencos can have access to it.</p>	<p>Refer to Appendix 3 of the Final Determination Paper on the methodology for calculating the Spot LRMC and Term LRMC.</p>
	Paragraph 20	<p>Based on the pool price outcome on 20 Feb 2023, the use of 48 TPs for determining the Moving Average Price (MAP) is clearly not appropriate. The TPC will be triggered where there is no abnormality in the market observed.</p> <p>We would propose that EMA adopt a 7 days MAP at the commencement of the scheme i.e. similar to Australia and review the adequacy of this approach every 12 months.</p>	<p>The parameters of the TPC should be contextualised to the needs of the individual market. In Australia, the 7-day MAP for their CPT mechanism was designed primarily to mitigate volatility arising from extreme weather events such as droughts. As for Singapore, the TPC parameters are focused on mitigating vicious cycles of price volatility and risk aversion as materialised during the global energy crunch.</p> <p>For Singapore, a TPC mechanism with MAP of 3-7 days would not respond timely or effectively against extreme USEP volatility, and result in adverse impact to the SWEM as observed in H2 2021. Refer to EMA’s simulation results and assessment in the Final Determination Paper.</p>
	Paragraph 22	<p>We noted that the recommendation is not to apply TPC to the Demand Response Scheme (DR) so as to encourage demand response providers to continue to offer their services which will help to normalize the market and facilitate deactivation of the TPC.</p> <p>The reason given to exempt the DR from TPC applies to all generating units in the system. All generating units should then be exempted from the TPC to ensure that they continue to offer their services to normalize the market. In particular, similar treatment should be extended to the OCGT as they do not operate as frequently and require higher prices to recover their LRMC. OCGT is considered more valuable than DR due to its fast ramping capability, and ability to follow dispatch and maintain energy output for longer periods.</p>	<p>The TPC is applied to the supply-side as the extreme price volatility are due to supply-side factors such as higher and/or inadequate offers from the energy suppliers.</p> <p>The exclusion of demand-side resources such as DRs is intended to incentivise more demand-side participation which will in turn help normalise the market and deactivate the TPC at a faster pace.</p> <p>OCGTs may seek compensation under the Market Rules should they be dispatched and</p>

Stakeholder	Section/Paragraph	Comments	Responses
		<p>As such, from a level playing field perspective, once TPC is activated, it shall apply to the DR. If the DR is going to be exempted, all generating units shall be exempted from TPC.</p>	<p>are unable to recover actual cost of supply due to the USEP being capped.</p>
	<p>General Comment</p>	<p>We are of the view that in the long run, free market forces generally provide a more efficient and stable environment for the operation of wholesale electricity markets than with government intervention. TPC should not be a permanent feature of the Singapore Wholesale Electricity Market. It should be a temporary measure for a period 12 months and any extension to be based on the market condition at the time of extension.</p> <p>Currently, in the absence of TPC, PSO is able to direct Gencos to operate its generating units and submit their offers at a prescribed prices via the Directed Standby LNG Scheme (DSS). With the introduction of TPC, the DSS shall ceased. Otherwise, excessive government intervention will distort market signals and decrease incentives for Gencos to invest in new capacity.</p> <p>While TPC mechanism may aim to mitigate extreme energy price volatility in the wholesale electricity markets, its combination with the existing DSS mechanism could have significant unintended consequences and should be approached with caution.</p> <p>As such, we would propose considering the removal of the DSS if EMA decides to implement TPC.</p>	<p>The global energy crunch that started in 4Q 2021 has shown that extreme price volatility in the wholesale electricity market affects the functioning of the broader electricity market, to the detriment of market participants and consumers. The TPC is intended to be a permanent feature in SWEM, acting as a guardrail to restore the orderly functioning of the electricity market during times of extreme price volatility, thereby preventing vicious cycles of sustained price volatility, which can affect the long-term viability of the energy market and wider economy. The overall TPC mechanism is designed such that the TPC is activated based on the two key parameters, viz. the MAP and MAPT working collectively. EMA has calibrated these parameters by benchmarking against the USEP SD as observed in periods where significant risk aversion behaviour was observed. This approach allows the TPC mechanism to automatically and systematically kick-in in future to mitigate similar levels of extreme USEP volatility that was shown to lead to a vicious cycle of risk aversion and USEP volatility which disrupted the orderly functioning of the electricity market.</p> <p>The DSS and the TPC mechanism serve different purposes. The DSS is intended to guard against projected supply shortfall in the SWEM to ensure power system reliability while the TPC is intended to mitigate vicious cycles of extreme price volatility to restore orderly</p>

Stakeholder	Section/Paragraph	Comments	Responses
			<p>functioning of the market. DSS has been institutionalised as a permanent feature to safeguard energy security. Accordingly, TPC activations should be overlaid with concurrent DSS activations (if any) to ensure power system reliability.</p>