

**EMA Response to Feedback from Industry Participants on Consultation Paper
 “Review of Policy on Direct Supply of Electricity by Generating Sets to Onsite Loads”**

General Comments

No	Company	Feedback on Consultation Paper	EMA’s Response
1	Senoko	<p>We understand that the 18 November paper is at a preliminary consultation phase. Hence, further work needs to be undertaken on how the proposals in the paper would be implemented in the wholesale electricity market rules. At an appropriate time, we recommend that the EMA make its proposal to the Rule Change Panel (RCP) for careful consideration using the regular rules change process, rather than directing the changes in accordance with its powers under section 46(2)b of the Electricity Act.</p> <p>Policy Changes Should be Seen in Context of Long-term Plan for Embedded Generation. While the consultation paper is focused on specific issues relating to embedded generation (EGs), it is scant on how these changes will fit into EMA’s overall policy on the treatment of EGs within the Singapore electricity market. We therefore respectfully request that the EMA clarifies its overall policy intent with regard to EG capacity.</p>	<p>EMA has consulted the industry on the proposed policy changes. Government would have to make its final policy decisions for Singapore as a whole, after taking careful consideration of the industry’s feedback. Once the policy decisions are made, EMA would direct EMC to make the necessary market rule changes to achieve the policy objectives.</p> <p>The overall policy intent is for the development of EG capacity to be driven by the economy. The proposed changes are intended to refine the policy with regard to embedded generation.</p>

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2	Senoko	<p>The Singapore market is designed on a gross pool basis so that all market participants will be treated on an equitable basis. Exceptions to this basic design principle should only be made when the benefits clearly outweigh the costs. It is irrefutable that EGs are part of the Singapore electricity market and hence should not receive any special status without adequate justification. Already the treatment of EGs is inconsistent with the gross pool design in several aspects. The proposals on net treatment for exporting EGs as well as gross bidding of EGs are further deviations inconsistent with EMA's previous decisions. For example, in 2006, EMA decided that only non-exporting EGs (and not exporting EGs) should be granted net treatment of market charges as they do not "compete to sell electricity [and] will not distort competition in the electricity market." However, in the 2009 paper it is proposed that exporting EGs will be granted net treatment of market charges because they can "optimize their operation and enhance competition in the electricity market". This change in position and its resulting inconsistency is puzzling as the EMA has not explained how it could reconcile its two rather differing opinions on the same matter.</p> <p>It is important for the industry fully understand how the EGs will be treated in the market. Any change in the current treatment may have far reaching consequences as to the market design and cost allocation among market participants. For instance, we anticipate that with the lifting of Non-Frequency Response caps and hence introduction of more EGs into the market, the current reserves allocation method will not be adequate to address the reserve risks posed by these EGs, even with the proposed "back off" mechanism. Commercial gencos cannot be expected to bear a greater proportion of reserves than they have caused; EGs may eventually have to provide their own reserves under a modified version of the runway method.</p> <p>This is but only one example of the complexities created if there was a significant rise in EG capacity. To ensure that these issues are flagged up on the onset so that they can be dealt with, we request that the EMA is clear on the objective of the proposed EG policy. We note that our request for a copy of the NERA paper which contains the genesis of these proposals was declined.</p>	<p>An embedded generator (EG) generates electricity to its onsite load for self-consumption. It normally does not export power to the grid.</p> <p>Government had, in Aug 2006 following its review, decided to apply a limited form of net treatment on non-reserve charges to EGs that do not export power into the grid. Government's policy decision then is broadly reasonable within the context of the National Electricity Market of Singapore (NEMS). The net treatment for EGs that do not export power and compete to sell electricity would not distort competition in the electricity market. In addition, it is noted that many advanced jurisdictions such as Australia, UK and the U.S. Pennsylvania – New Jersey – Maryland (PJM) market practice some form of net treatment for EGs.</p> <p>In the current review, it is proposed that the net treatment on non-reserve charges be extended to all EGs regardless of whether they export power into the grid. This is a refinement to the existing policy to enable EGs to optimize the sizing of their plants. EGs will continue to pay the reserve charges on a gross basis and those who wish to export would still have to bid and compete for their export quantities to be despatched into the market. This would not distort competition in the electricity market.</p> <p>We would clarify that it is not the policy intent to lift non-frequency response (NFR) caps but rather to replace the current method of NFR allocation on a first-come-first-serve basis with one that uses a market mechanism while still maintaining system security. It is to be noted that EGs like commercial gencos will continue to bear their share of reserve costs.</p> <p>We have assessed the industry's feedback and note that a market mechanism could create uncertainty for new investors. Since there is still some margin in the NFR limit, we will not introduce a market mechanism at this time. The current first-come-first-served scheme of allocating NFR capacity will remain while EMA continue to explore other options.</p>

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3	Keppel	An embedded generation or generator ("EG") is defined as a power generation plant that generates electricity to its onsite load for <u>self consumption</u> and <u>does not export power to the grid</u> ¹ . As such EGs are not envisaged to 'compete' with other generation companies ("gencos") to sell electricity and do not pose distortion to the existing market structure. In this public consultation ("PC") however, the definition of EG is open to interpretation and this can potentially create a distortion in the competitive electricity market structure which has taken years to reform.	See response to Item 2 above.
4	Keppel	The PC does not address situations when EGs are on forced outage or not generating and their impact to the market. Clear guidelines and allocation of costs must be catered for to ensure that 'user-payer' principle is adhered.	There is no change to the market treatment of EGs under these situations. EGs will continue to bear the reserve costs on a gross basis.
5	Tuas	We note the review is with regards to the policy on direct supply of electricity by generating sets to onsite loads or otherwise identified alternatively as embedded generators (EGs) / autogenerators. However under the automatic penalty scheme under para 2.9, the recommendations has been expanded to include all other GRFs. As this has far wider implications for the industry and market, the review paper is insufficiently detailed nor inappropriate to deal with the issue of automatic penalty for non-EGs GRFs. EMA should therefore confine the review and recommendations to just the embedded generators as set out in the paper and engage the wider industry on any penalty scheme on GRFs other than EGs separately.	NERA has recommended the proposed automatic penalty scheme for contravention of dispatch schedules by all GRFs. Currently such contravention will be reviewed by the MSCP, which will decide on the penalty to be imposed. NERA's recommendation would enhance transparency. It is not justifiable to restrict the proposed automatic penalty scheme only to EGs.
6	SIEC	<p><u>Legacy Exemptions</u></p> <p>SIEC supports the EMA's position of maintaining and honoring the existing exemptions that have already been issued. In 2007 the EMA issued an Exemption Order to the Electricity Act (Chapter 89A) titled Electricity (Electricity Generation and Retail Licence) (Exemption) Order 2007, No. S 212 ("EO No. S 212").² EO No. S 212 states the companies, premises, and generation units that are exempt from section 6 (1) (a) and</p>	We would clarify that the Electricity (Electricity Generation and Retail Licence) (Exemption) Order 2007 will remain in force in the context of this consultation.

¹ Information Paper "Net Treatment of Embedded Generators" released by the EMA on 21 August 2006

² This document is available for download from the EMA's website at http://www.ema.gov.sg/media/files/licences/exemption_orders/ElectricityExemptionOrder2007.pdf.

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		<p>section 6 (1) (c) of the Electricity Act (Chapter 89A). During the Briefing the EMA confirmed that the EO No. S 212 will be honored and preserved irrespective of the implementation of any of the proposed policy changes documented in the Consultation Paper and/or any other related or unrelated policy changes that may be implemented.</p> <p>In addition, SIEC understands and supports the EMA's proposition that any other waiver or exemption granted by the EMA to any of SIEC's members will also be honored.</p>	
7	SPS	EMA proposes to make the following changes to the policy on direct supply of electricity. What do you mean by direct supply of electricity? Are you referring to EG?	Direct supply of electricity refers to generation of electricity for the consumption of on-site loads, i.e. Embedded Generation (EG).
8	EMC	EMC notes that some of the proposals in the policy paper are still at the concept stage. As this paper stated a target implementation date of Dec 2010, we would like to point out that the ability to meet this target will depend on when these proposals are finalised and the time required to implement the necessary changes in the PSO, EMC and/or MSSSL systems. For a smooth implementation process, EMC will require sufficient time to implement rule changes (including drafting of new rules and industry consultation) and coordination between various organisations (e.g. PSO, EMC and MSSSL) on system changes that are required. Thus we suggest that EMA discuss and confirm the implementation details with various organisations, before publishing its decision on the final proposals and implementation timeline.	Once the decision on the policy changes is finalised, EMA will work with the various parties, including EMC, to ensure smooth implementation.
9	EMC	We would like to state that EMC can only work out the time required for implementation when all details required for the implementation are finalised.	See response to Item 8 above.
10	SCIC	Can a group of companies within the same vicinity (bounded by fence not requiring going on LTA road network) combine energy requirement and generate electricity? In this case, the land may be from one tenant but the other companies nearing the vicinity (bounded by fence not requiring going on LTA road network) intends to co-finance and draw the energy from it. Can this be incorporated in the policy?	SCIC's proposed configuration is not allowed under the current policy. EMA have to carefully consider it before making a decision.

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11	SCIC	There may be some sensitivity for companies as the policy may have a bottom-line impact on their current operational costs. The paper does not have any information regarding support for companies that are seeking alternative power supplies, wind, solar etc....to supplement the process plant power demands or to feed to the grid. Has EMA taken this into consideration?	The proposal in this consultation is a refinement to the existing policy to enable EGs to optimize the sizing of their plants while not distorting competition in the electricity market. Government support is not relevant to the consultation. Nevertheless the Government does have various support schemes to promote renewable energy.

2.2 Transition towards Fixed Grid Charges

12	Keppel	As it would be impractical to cap or cease development of EGs going forward, EMA must consider the risks posed by EGs to the power system and the gas network (esp. if EGs are also cogen/trigen units). An alignment of treatment for EGs who wishes to export power and gencos would only be a sensible consideration, coupled with shifting towards a 100% fixed grid charging regime on a parallel implementation timeline to ensure accountability and responsibility to system security.	<p>We do not agree with the alignment of treatment for EGs who wish to export power and gencos in respect of net-treatment of non-reserve charges, as an EG generates electricity primarily for its onsite load.</p> <p>The proposal is to extend the net treatment on non-reserve charges to all EGs regardless of whether they export power into the grid, to optimize the sizing of their plants. EGs will continue to pay the reserve charges on a gross basis and those who wish to export would still have to bid and compete for their export quantities to be despatched into the market. This would not distort competition in the electricity market.</p>
13	Tuas	Grid investments are sunk decisions and any economic bypass will only result in subsidisation of EGs at the expense of other grid users. The move to remove the artificial bias of grid charges towards EGs will remove artificial distortions and allows for economically efficient investment decisions and hence is supported.	We note Tuas Power's comments.
14	Senoko	<p>We welcome EMA's long term plan to review the grid charging scheme. Senoko had raised in the past that redundancy and stranding of transmission assets could lead to inequitable grid charges in favour of EGs. We hope that the EMA's review will ensure that the burden of grid costs will be more equitably distributed among the consumers, and that there is no cross subsidising between customers.</p> <p>However, at this stage, it is not obvious to us that a fixed charging regime would be the solution to ensure such equitable distribution.</p>	NERA has assessed that the current grid charging structure creates an artificial bias towards EGs. EMA agrees in principle and intends to shift the balance of grid charges towards a fixed charging regime progressively.

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15	SIEC	<p>Section 2 of the Consultation Paper cites NERA's 2008 Report (the "NERA Report") to MTI, and states that the NERA Report assessed that there was, in NERA's opinion, an artificial bias towards embedded generators due to the way grid charges are currently structured in Singapore. More specifically, grid charges currently consist of a fixed component (the contracted capacity charge or kW charge) and a variable component (the use of system ("UoS") charge or kWh charge). This allocation of capacity reservation charge to fixed rates and actual usage fees to a variable rate structure is consistent with traditional ratemaking principles. Further, the Consultation Paper references that on the whole, the variable component accounts for approximately 25% of total grid charges. As a result, it appears that the EMA has concluded that companies may find it more attractive to build their own embedded generators in order to save on the variable component of total grid charges. The Consultation Paper also cites that the NERA Report recommends that this artificial incentive be removed by shifting towards a 100% fixed charge grid regime.</p> <p>Unlike the consultation paper by Frontier Economics issued on 15th May 2007, titled "Review of Policy on Direct Supply of Electricity from Generating Units", where the supporting report was provided to and commented on by industry, the NERA Report has not been released. As a result, the assumptions behind the approximation of the variable component of total grid charges may not be reflective of all voltage classes of contestable consumers. As represented in the illustrative example below, SIEC views that the split between the fixed component and the variable component of total grid charges for an indicative Extra High Tension ("EHT") contestable consumer is approximately 90% and 10% respectively. In this regard, we question the basis of what has been described earlier as an artificial bias by NERA.</p> <p>Furthermore, the decision to invest in embedded generation involves significant capital and operating expenditure and is weighted against the benefits including higher energy efficiency, more competitive power supply, lower emissions, and so on. From a total cost of power standpoint, the variable cost component of total grid charges represents less than 1% of the total energy costs and hence is not material to influence an</p>	<p>NERA's review of the embedded generation rules was only a small part of the consultancy study commissioned by MTI and it utilized information that was confidential. As such, we are not able to circulate the report.</p> <p>We agree in principle with NERA's assessment that the grid cost is predominantly fixed cost and the current grid charging framework creates an artificial bias towards EGs. For example, an EG that relies on the grid mainly for backup purposes only would pay little variable charge and still enjoy full benefit of the grid backup.</p> <p>In any case, we intend to shift towards a fixed charging regime only progressively, taking into consideration the impact of any such changes on consumers.</p> <p>The 25% of grid charges being variable charges as stated in the Consultation Paper is an average based on the grid charges of contestable consumers with the majority of such consumers being high-tension (HT) customers. There are currently only 3 EGs connected at Extra High Tension compared to 14 HT EGs.</p> <p>We note SIEC's feedback that the variable component of total grid charges represents less than 1% of the total energy costs and hence is not material to influence an investor's decision to develop embedded generation.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
		<p>investor's decision to develop embedded generation.</p> <p>SP PowerGrid ("SPPG") briefed industry on their transmission pricing principles as part of the EMA's briefing on the procedures for application for electricity supply in the new electricity market framework held on 8th through 10th October, 2002.³ SPPG's transmission pricing principles are summarized as follows:</p> <ul style="list-style-type: none"> • charges must be cost reflective; • charges must encourage the efficient use of the transmission network; and • charges must be simple to understand and implement. <p>In the same briefing, one of SPPG's key messages was that Off Peak⁴ consumption must be encouraged and maintaining a strong price signal is essential in order to achieve this.</p> <p>SIEC challenges how the transition from the current grid charge regime, which consists of a combination of a fixed component and a variable component, to an entirely fixed component is consistent with SPPG's stated transmission pricing principals.</p> <p>We emphasize that the variable component in the illustrative example consists of a Peak UoS component and an Off Peak UoS component whereby the Off Peak UoS rate is significantly lower than the Peak UoS rate. This is by design and is consistent with the practice already adopted in many other jurisdictions around the world, to encourage greater utilization of system resources during Off Peak periods. We highlight that the proposed change towards an entirely fixed component grid charge regime, would not be reflective of SPPG's costs and would not encourage Off Peak consumption.</p> <p>On balance SIEC recommends that the current regime of a combination of a fixed and a variable grid charge component remains in place. We acknowledge that the EMA stated during the Industry Briefing conducted by the EMA on 4th December 2009 ("the Briefing") that any changes to the current grid charge</p>	

³ This document is available for download from the EMA's website at http://www.ema.gov.sg/media/files/info_papers/101202/UPLOAD_20061122122103.pdf

⁴ Off Peak refers to the period commencing 7:00 AM through to 11:00 PM Monday through Sunday.

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		<p>regime will not take place prior to consultation with industry and would not entail a significant departure away from SPPG's founding transmission pricing principals. Furthermore the EMA stated that any changes would be applied consistently across all voltage segments ranging from low voltage end users to higher voltage end users to avoid discriminatory implementation of any proposed policy change.</p>	
16	BASF	<p>Should the EMA shifts 100% to fixed charging regime, this would give company or investor like BASF unfavorable energy cost. The charge mechanism should be driven by energy consumption. As BASF tends to be energy intensive for its industries, the charges shall consider consumption factors in the charges mechanism. For example although BASF commits to 10MW contracted capacity or MD (maximum demand), on a particular month due to turnaround, the energy consumption could be much less than the contracted demand or normal peak demand. Therefore EMA must consider the consumer point of view in regulating the charge mechanism rather than focusing on securing guaranteed demand from customer in determining the charge mechanism.</p>	<p>Grid costs are incurred once the cable and equipment are installed, i.e. grid costs are not affected by the amount of electricity (kWh) flowing in the grid, or the frequency in which grid capacity is being used. EG customers draw less electricity (kWh) from the grid compared to non-EG customers and hence pay less of the variable component. But the EG customers still enjoy the full benefit of the grid backup resulting in distortion. As such, a better principle for cost-recovery is through a fixed grid charge.</p> <p>In any case, EMA intend to shift towards a fixed charging regime only progressively, taking into consideration the impact of any such changes on consumers.</p>
17	SPS	<p>"EMA agrees in principle with NERA's recommendation and intends to shift the balance of grid charges towards a fixed charging regime. We will do this progressively through the annual review of grid charges, taking into consideration the impact of any such changes on consumers." I understand there will be changes to the UoS charge. Is this only applicable for EG or does this include other HT and LT accounts as well?</p>	<p>The shift towards a fixed charging regime would apply progressively to all consumers.</p>
18	Pfizer	<p>Based on initial study Pfizer may get affect. Need more information to study the total impact to Pfizer. We are very much concern on the charges as it may affect our operation cost.</p>	<p>The move towards fixed grid charging regime would be done progressively, taking into consideration the impact of any such changes on consumers.</p>

2.6 Net Treatment of Non-Reserve Charges for Embedded Generators

No	Company	Feedback on Consultation Paper	EMA's Response
19	Tuas	<p>All players enjoy the benefits that the market brings. However, the introduction of an arbitrary classification scheme such as embedded generation/onsite load that favours such generating units/loads over other generating units/loads (ie. in terms of payments of market charges) just redistribute the costs of market operations onto other parties and is not align with the design of the market nor the Electricity Act which emphasises the application of principles of equality of treatment and non-discrimination. However it has been recognised in the initial design of the Singapore market that the benefits of imposing such charges on generating units/loads below a certain size does not result in tangible benefits. Given that the embedded generators in the Singapore market are generally of two distinct classes, ie, less than 10MW capacity and significantly greater than 10MW capacity, it is counter-proposed instead that net treatment of non-reserve charges be applicable only for generating units of capacity less than the 10MW threshold while existing regime for other embedded generating units of capacity greater than 10MW be maintained. This will allow the principles of equity and cost allocation embodied in the design of the market be preserved while at the same time recognising the impracticality of imposing too much restrictions on small units.</p>	<p>The proposal is not supported. Applying the 10MW threshold on the application of net treatment of non-reserve charges to embedded generators would potentially disincentivise them from optimizing the size of their plants, which would be an economically sub-optimal outcome. EGs size their plants according to their operations, e.g. steam considerations, and not according to the amount of electricity they wish to sell in the market.</p>
20	Seraya	<p>Extending the net treatment of non-reserve charges increases the cross-subsidisation of EGs by non-EG gencos and consumers.</p>	<p>See responses to items 2 and 19 above.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
21	Senoko	<p>Senoko is concerned that the proposed changes to the EG policy is a further unlevelling of the playing field biased in favour of EGs. This could lead to increased EG capacity which in turn could impact the stability and efficiency of the Singapore electricity system.</p> <p>Already, the current treatment of importer EGs is a deviation from the gross pool market design that Singapore has adopted. In a gross pool, the market clears all quantities, and the participants are supposed to bear all system costs. EMA's current treatment of importer EGs, however, transfers a majority of the burden of system costs from these EGs to the rest of the market.</p> <p>EMA's current proposal to extend this preferential treatment to exporter EGs exacerbates this inconsistent treatment further. The reason cited for this proposal is to "enable EGs to optimise their operation and enhance competition in the electricity market". We fail to see how this proposal can "enhance competition" the market; indeed, we think this proposal would instead transfer more system costs to the rest of the market participants such as commercial generators, retailers and customers.</p> <p>We object to this proposal on the basis of inequity and would also request the EMA to reverse its earlier decision with respect to importer EGs as well.</p>	See responses to items 2 and 19 above.

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22	IPC	<p>IPC's view is that the criteria for determining if an EG should be accorded net/gross treatment in respect of non-reserve charges and net/gross bidding depends on the impact to the system if its onsite generating unit were to trip off. If the onsite generating unit trips off and the impact to the system is the total load of the onsite generating unit, then it should be treated on a gross basis for both non-reserve charges and for the purpose of bidding into the pool. Take the example of an EG which generates 10MW with an onsite load of 8MW, i.e. with a net export of 2MW. If the onsite generating unit trips off and the onsite load continues to draw 8MW from the grid, the total impact to the system is therefore 10MW (loss of 2 MW export plus draw of 8MW from the grid). It should rightly be treated on a gross basis. If the onsite generating unit trips and the onsite load is also automatically disconnected from the grid, the impact to the grid is only 2MW. It should then be treated on a net basis. If an EG derives benefits from being connected to the grid, it should pay the same fees levied on other market participants.</p> <p>On a related question, is the commercial generator allowed to bid on a net basis and pay the non-reserve charge based on net export, i.e. after deduction of the house load?</p>	<p>See responses to items 2 and 19 above.</p> <p>Commercial generators' outputs are already measured on a 'net' basis, i.e. after deduction of their auxiliary loads.</p>
23	SIEC	<p>Section 2.6.2 of the Consultation Paper proposes a policy change whereby embedded generators are granted net treatment on non-reserve charges regardless of their power export status.</p> <p>SIEC is supportive of this proposed policy change for the following reasons:</p> <ul style="list-style-type: none"> • allowing power export with net-treatment on non-reserve charges will enable embedded CHP to be sized appropriately to facilitate the selection of the most efficient CHP configuration which provides for both existing combined steam and power requirements and future growth requirements; • enable the embedded CHP to achieve higher total energy efficiency resulting in reduced GHG emissions lowering Singapore's emission intensity and contributing 	<p>We note that SIEC is supportive of the proposal to grant net treatment on non-reserve charges to all EGs regardless of whether they export power into the grid.</p>

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		<p>to the Government of Singapore's target to reduce emissions growth by 16% below business as usual levels by 2020⁵;</p> <ul style="list-style-type: none"> • promote greater competition in the NEMS; and • promote greater diversity of supply in the NEMS. <p>SIEC observes that there is no policy change proposed in the Consultation Paper to address the allocation of Regulation Reserve charges ("AFP"). In this regard, SIEC recommends that the allocation of AFP as it relates to the combined embedded CHP facility and the corresponding load of the integrated industrial complex, be restructured.</p> <p>Currently AFP is allocated both to generators and to load, however, this is problematic for loads with embedded CHP. AFP is allocated to load on a gross load basis in a uniform manner irrespective of how variable the load pattern is. AFP is also allocated to generation based on the cut-off size limit of 5 MWh per ½ hour trading period (10 MW) referred to in Chapter 7 of the Market Rules. A contestable consumer with an embedded generator therefore is subject to AFP charges on the gross load as well as on generation up to the cut-off size limit. This is illustrated in the summary table below for the same indicative EHT contestable consumer example referenced earlier.</p> <p><u>Indicative Monthly Allocation of AFP for an EHT Contestable Consumer</u></p>	<p>On regulation reserve charges, we would like to clarify that regulation reserve is required for the power system to balance the instantaneous fluctuations in customers "load" or demand for electricity and the supply from generation facilities.</p> <p>Regulation reserve charge is meant to offset system costs of ensuring system frequency stability and regulation reserve needs to be provided whether or not an embedded generator draws power from the system.</p> <p>Since an embedded generator has load and generation facilities, both of which contribute to the fluctuations between demand and supply, it is equitable that embedded generators pay for regulation under the current rules.</p> <p>In addition, if AFP charges are allocated to loads based on actual consumption deviations from a designated variation allowance, studies have shown that some EGs would actually be worse off. Furthermore, charging AFP according to actual consumption variation is complicated and requires significant changes to the current system, which is costly.</p>

⁵ Singapore Government press release on National Statement on Climate Change by Prime Minister Lee Hsien Loong released on 21st December 2009.

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		<p><u>Scenario 1: No Embedded Generator</u></p> <table border="1"> <thead> <tr> <th data-bbox="407 266 821 293"><u>Description</u></th> <th data-bbox="821 266 989 293"><u>Units</u></th> <th data-bbox="989 266 1171 293"><u>Value</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="407 302 821 329">AFP Applied to Load</td> <td data-bbox="821 302 989 329">MWh</td> <td data-bbox="989 302 1171 329">25,920</td> </tr> <tr> <td data-bbox="407 337 821 365">AFP Applied to Generation</td> <td data-bbox="821 337 989 365">MWh</td> <td data-bbox="989 337 1171 365">-</td> </tr> <tr> <td data-bbox="407 373 821 401">Total AFP</td> <td data-bbox="821 373 989 401"></td> <td data-bbox="989 373 1171 401">25,920</td> </tr> </tbody> </table> <p><u>Scenario 2: 40 MW Embedded Generator</u></p> <table border="1"> <thead> <tr> <th data-bbox="407 500 821 527"><u>Description</u></th> <th data-bbox="821 500 989 527"><u>Units</u></th> <th data-bbox="989 500 1171 527"><u>Value</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="407 535 821 563">AFP Applied to Load</td> <td data-bbox="821 535 989 563">MWh</td> <td data-bbox="989 535 1171 563">25,920</td> </tr> <tr> <td data-bbox="407 571 821 599">AFP Applied to Generation</td> <td data-bbox="821 571 989 599">MWh</td> <td data-bbox="989 571 1171 599">7,200</td> </tr> <tr> <td data-bbox="407 607 821 634">Total AFP</td> <td data-bbox="821 607 989 634"></td> <td data-bbox="989 607 1171 634">33,120</td> </tr> </tbody> </table> <p><u>Summary</u></p> <table border="1"> <thead> <tr> <th data-bbox="407 695 821 722"></th> <th data-bbox="821 695 989 722"><u>Units</u></th> <th data-bbox="989 695 1171 722"><u>Value</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="407 730 821 758">Duplicative AFP</td> <td data-bbox="821 730 989 758">%</td> <td data-bbox="989 730 1171 758">28%</td> </tr> </tbody> </table> <p>Scenario 1 referenced in the summary table above illustrates the indicative EHT contestable consumer without an embedded CHP facility while in Scenario 2 the same EHT contestable consumer is assumed to have a 40 MW embedded CHP facility. In this illustrative example, under Scenario 2, the consumer is exposed to duplicative AFP charges on the equivalent of 7,200 MWh⁶ or approximately 28% of gross load.</p> <p>SIEC recommends that the treatment of AFP charges to loads with embedded generation be rectified to better reflect the causer pay principle by firstly, avoiding duplicative AFP charging, and secondly, allocating AFP charges to loads based on actual consumption deviations from a designated variation allowance. This will ensure contestable consumers who maintain more uniform, flat load patterns, are not unfairly allocated AFP charges.</p>	<u>Description</u>	<u>Units</u>	<u>Value</u>	AFP Applied to Load	MWh	25,920	AFP Applied to Generation	MWh	-	Total AFP		25,920	<u>Description</u>	<u>Units</u>	<u>Value</u>	AFP Applied to Load	MWh	25,920	AFP Applied to Generation	MWh	7,200	Total AFP		33,120		<u>Units</u>	<u>Value</u>	Duplicative AFP	%	28%	
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	<u>Units</u>	<u>Value</u>																															
Duplicative AFP	%	28%																															
24	BASF	<p>It is a clever move since BASF would be a "contestable Consumer" under the Singaporean energy market. Therefore this would motivate EGs to optimize their operation and enhance competition among Retailers or MSSL.</p>	<p>We note BASF is supportive of the proposal to grant net treatment on non-reserve charges to all EGs regardless of whether they export power into the grid.</p>																														

⁶ 7,200 MWh is calculated assuming 5 MWh per ½ hour over a period of 24 hour per day for 30 days.

No	Company	Feedback on Consultation Paper	EMA's Response
25	SPS	<p>Can you please provide us with some numerical examples for the following scenarios as well.</p> <ul style="list-style-type: none"> a. Injecting EG - under normal operation b. Injecting EG - under maintenance c. Injecting EG - starting up d. Non-injecting EG - under normal operation e. Non-injecting EG - under maintenance f. Non-injecting EG - starting up 	<p>Please refer to the Annex attached on the Settlement Methodology and Numerical Examples.</p> <p>Please note that if the proposal to grant net treatment on non-reserve charges to all EGs regardless of whether they export power into the grid is implemented, there will no longer be a need to differentiate between an injecting and non-injecting EG. At the end of a 30-min interval, the meter data would show if an EG had injected electricity into the grid. In addition, an injecting EG under maintenance is the same as a non-injecting EG under maintenance, i.e. in both cases they do not inject electricity into the grid.</p>
26	EMC	<p>(i) EMC would like to emphasize that, according to the numeric example in the consultation paper, MSSL would need to provide EMC additional meter data (i.e. the WMQ) and revised computation of the WCQ (as discussed earlier between EMA, MSSL and EMC) for settlement purpose. We had earlier provided EMA with our proposed settlement formulas. EMA had subsequently circulated the formulas that incorporated both EMC and MSSL's view. We would like EMA to confirm these formulas are correct and, for clarity, reflect these formulas in the final proposals.</p> <p>(ii) In the paper, only one example of a net-exporting EG is shown. For clarity, an example of a net-importing EG should also be included.</p> <p>(iii) EMC would like EMA to confirm that the workings of the price neutralisation scheme (as set out in Chapter 7 section 4.4 of the Market Rules) will NOT be affected.</p>	<p>(i) Please refer to the Annex attached on the Settlement Methodology and Numerical Examples.</p> <p>(ii) Please refer to the Annex attached on the Settlement Methodology and Numerical Examples.</p> <p>(iii) The workings of the price neutralisation scheme will not be affected.</p>

2.7 Gross Bidding of Embedded Generators

27	Tuas	<p>Tuas Power Generation do not see an issue with exempting all generating units which do not export electricity from the obligation to bid into the market. However, the designers of the current Singapore market has articulated that for generators that elect to export power to the market, they should be subjected to the same market rules and regulations as any other generators with no exemptions since there are no practical or administrative</p>	<p>Requiring EGs to bid gross into the market regardless of whether they export would result in sub-optimal outcome. EGs will continue to pay the reserve charges on a gross basis and those that intend to export electricity would still have to bid and compete for their export quantities in the market.</p>
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No	Company	Feedback on Consultation Paper	EMA's Response
		<p>reasons for providing such generating units any exemption pursuant to the Electricity Act. Tuas Power Generation therefore only support the exemption for gross bidding of embedded generators who are not net exporters.</p>	
28	Seraya	<p>EMA's suggestion to grant EGs must-run status for generation that is deemed to supply own load increases economic inefficiency. During times of low load, the value to EGs of not being ramped down may be exceeded by the value of non EGs not being ramped down but due to must-run, non EGs would be ramped down instead of EGs. Without the EGs being involved in the bidding mechanism, economically inefficient outcomes may result where the value lost by non EGs being ramped down is outweighed by the value gained by the EGs not being ramped down. Not subjecting EGs to a bidding mechanism can also endanger system security. As EGs would not be ramped down due to must-run status, non EGs would be ramped down instead. If forced to go below Minimum Stable Load, the non-EGs would face higher risks of forced outages. This not only endangers system security but the increased risks would put upward pressure on electricity prices as EGs would price in the increased risks.</p>	See response to item 27 above.
29	Senoko	<p>The proposed mechanism for gross bidding requires changes to the market clearing engine (MCE) to implement "must run" units. This requires careful consideration, and hence it is appropriate for the RCP and its Technical Working Group to consider this proposal as part of the normal rule change process.</p>	<p>Once the decision on the proposed gross bidding is made, EMA will direct EMC to make the necessary market rule modifications to achieve the policy objective. EMC would, through its regular process, publish the market rule changes on its website where the market participants can provide their comments.</p>
30	SIEC	<p>Section 11.5 of System Operation Manual ("SOM"), a regulatory document published by the Power System Operation Division of the EMA states "Wherever possible, the following type of load will not be subjected to automatic under frequency load-shed or manual demand curtailment:</p> <ul style="list-style-type: none"> • hospitals and major medical complex; • military installations; • airports and seaports; • MRT stations; • vital government buildings/installations; • refineries and major chemical complex; 	<p>An EG's 'must run' quantity should be based on its onsite load consumption as EG is defined as a power generation plant that generates electricity primarily to its onsite load for self-consumption. The 'must run' quantity should not be based on the associated power generated to meet the steam requirements. Doing so would "guarantee" EGs the export of power into the grid to the extent of meeting all their steam requirement, thereby distorting the market and unleveling the playing field.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
		<ul style="list-style-type: none"> • wafer fabrication plants; and • water treatment plants and major pumping stations. <p>Section 2.7.2 (i) of the Consultation Paper states “the obligation to bid into the market will be removed entirely for EGs which do not export electricity. Instead, these EGs will be required to furnish specified information pertaining to their generation quantities for their own use to the EMC and PSO on an ex-ante basis and at their own cost.”</p> <p>SIEC recommends that the associated power output to meet the steam requirements of the specified facilities be treated as the site’s ‘must run’ quantity (the “Must Run Quantity”) and that the Must Run Quantity be treated in a consistent manner with the load of specified facilities in the SOM referenced above due to the inter-relationship of the power and steam production and the sites load requirements. SIEC views the operational flexibility on the Must Run Quantity to be crucial for the safe and efficient operation of the site.</p> <p>One option to provide the operational flexibility required is through the approach currently employed for generation units issued with a Wholesaler (Generation) Licence. The EMA issued an Exemption Order from the Electricity Act (Chapter 89A) No. S 515 titled Electricity (Electricity Generation Licence) (Exemption) (No. 2) Order 2003 (“EO No. S 515”)⁷. EO No. S 515 states that any person who engages in the generation of electricity by means of a generating unit which a) has a name-plate rating of 1 MW or more but less than 10 MW; and b) is connected to the transmission system; and who is a market participant will be exempt from Section 6 (1) (a) of the Electricity Act (Chapter 89A).</p> <p>Generation units that satisfy the requirements of EO No. S 515 have been issued Wholesaler (Generation) Licences by the EMA and operate in the NEMS as generation settlement facilities (“GSF”). These units are typically embedded CHP facilities, also known as embedded tri-generation facilities, some of which are described in the summary table below.</p>	

⁷ This document is available for download from the EMA’s website at http://www.ema.gov.sg/media/files/licences/exemption_orders/electricity_gen_licence_exemption_no2_order_2003.pdf

No	Company	Feedback on Consultation Paper	EMA's Response									
		<p><u>Embedded CHP (Tri-Generation Facilities) GSF in NEMS</u></p> <table border="1" data-bbox="407 289 1176 402"> <thead> <tr> <th data-bbox="407 289 604 315"><u>Licensee</u></th> <th data-bbox="604 289 890 315"><u>Total Generation Capacity (MW)</u></th> <th data-bbox="890 289 1176 315"><u>Description</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="407 331 604 357">Schering Plough Ltd</td> <td data-bbox="604 331 890 357">9.6</td> <td data-bbox="890 331 1176 357">Embedded CHP (Tri-Generation Plant)</td> </tr> <tr> <td data-bbox="407 370 604 396">ISK Singapore Pte Ltd</td> <td data-bbox="604 370 890 396">9.6</td> <td data-bbox="890 370 1176 396">Embedded CHP (Tri-Generation Plant)</td> </tr> </tbody> </table> <p>In the NEMS, a GSF is not centrally dispatched, and as a result, is not required to bid in order to be scheduled by the market clearing engine. This status allows the generation unit the necessary flexibility on the timing and quantity of steam and power production without any external influence.</p> <p>SIEC recommends that embedded CHP facilities, regardless of their generation capacity, are treated consistently with GSFs for the purposes of supplying their Must Run Quantity to remove any artificial distortions in sizing an embedded CHP facility. This would entail an amendment to EO No. S 515 such that Section 6 (1) (a) of the Electricity Act (Chapter 89A) would not apply to embedded CHP facilities with a generation capacity ≥ 10 MW. Under the proposed regime, embedded CHP facilities ≥ 10 MW would furnish specified information pertaining to their generation quantities for their Must Run Quantity to the EMC and the PSO in a mutually agreeable format on an ex-ante basis at their own cost. Must Run Quantity consumed onsite would settle via the NEMS with price neutralization in accordance with the current treatment of GSF units.</p> <p>SIEC's recommendation is consistent with the Gross Pool market design framework of the NEMS and can be implemented with ease.</p> <p>SIEC appreciates that the EMA may require some time to consider the above proposal. In the interim, SIEC supports the EMA's proposed change in the Consultation Paper with one modification that the 'must run' quantity be based on the associated power generated due to the specified facility's steam requirements and that the embedded generator would not be required to submit a price bid for such quantities. SIEC agrees that the embedded generator should be required to bid any quantities over and above the site's Must Run Quantity into the NEMS and these quantities should be subject to scheduling.</p>	<u>Licensee</u>	<u>Total Generation Capacity (MW)</u>	<u>Description</u>	Schering Plough Ltd	9.6	Embedded CHP (Tri-Generation Plant)	ISK Singapore Pte Ltd	9.6	Embedded CHP (Tri-Generation Plant)	
<u>Licensee</u>	<u>Total Generation Capacity (MW)</u>	<u>Description</u>										
Schering Plough Ltd	9.6	Embedded CHP (Tri-Generation Plant)										
ISK Singapore Pte Ltd	9.6	Embedded CHP (Tri-Generation Plant)										

No	Company	Feedback on Consultation Paper	EMA's Response
31	BASF	This would help consumers as EGs would remove unnecessary costs associated with this bidding.	We note BASF's support on this proposal.
32	EMC	<p>(i) In paragraph 2.7.1, the paper states that "currently, all generators (including EGs) with aggregate capacity of more than 10MW are required to bid their gross generation capacity into the market...". EMC would like to clarify that currently, all generators which are GRFs (which could be less than 10MW in size, not just those who are 10 MW or more in size) need to bid in the gross generation they wish to offer to generate (i.e. NOT their capacity).</p> <p>(ii) EMC would like to point out that currently, all GSFs need not submit offers to EMC and their generation are not subject to central schedule. For clarity, the paper should state that the proposals in paragraph 2.7.2 apply only to EGs which are GRFs. Thus, only EGs that are GRFs are required to provide specified information on their generation quantities for their own use and will be subject to central dispatch i.e. EGs that are GRFs will receive a generation schedule in each half-hour period. This generation schedule will be the total of the "must-run" quantity and the export quantity (if any). This generation schedule will also be provided to PSO. In addition, the gate closure rules will apply to both quantities for self-consumption and export submitted by EGs that are GRFs.</p> <p>(iii) For the "must-run" quantities mentioned in paragraph 2.7.2(i), EMC would like to clarify that the MCE would create an offer price of negative 0.9VoLL (currently, VoLL is S\$5000) for these "must-run" quantities so that they would have a higher priority to be dispatched. In doing so, it is not guaranteed that these "must-run" quantities will always be dispatched and it is possible that a negative nodal price may be discovered for the EGs – in such instances, if the EGs are net-exporting, then they would be paid at the negative price (i.e. they would have to pay for their generation).</p> <p>(iv) For EGs that are GRFs and need to provide specified information on generation quantities for their own use, we would like EMA to clarify what "at their own cost", as stated in paragraph 2.7.2(ii), would entail.</p>	<p>(i) We note EMC's clarification.</p> <p>(ii) All generation facilities registered with EMC (both GRFs and GSFs) shall submit offers/information to EMC. Only GRFs are subjected to central dispatch. EGs can indicate in their offer their 'must-run' and export quantities.</p> <p>Also see comment to item 30 above</p> <p>(iii) Even if negative nodal price were discovered, there would be no impact on the EGs, as they would effectively not be paying for the electricity that they generate for their own use (must-run quantity) under the price neutralization process. For their export quantity, they would still have to bid and compete in the market and comply with the market rules.</p> <p>(iv) "At their own costs" means that the EGs would have to bear the costs of any IT system (hardware or software) that the EGs would have to install to be able to provide the specified information on the generation quantities.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
		<p>In addition, regarding Shell's question on whether it can submit standing data to EMC, EMC's view is that standing data in the format of standing offers can be submitted when the EG is operating in a stable manner and variation of its generation output is minimal. However, if in real-time there is any foreseeable change in its generation output, this should be communicated to EMC through offer variations in a timely manner and within the gate closure rules.</p>	<p>We note EMC's clarification. Furthermore, the current market rules already have provisions for such situation.</p>
33	Pfizer	<p>Pfizer don't have the facility to provide Gas demand data under the real time information (30sec file) to PSO.</p>	<p>This is a Transmission Code requirement and not relevant to this Consultation Paper. We note Pfizer's comments and would discuss with Pfizer separately on this issue. On a separate note, PSO is also working with the Gas Transporter to work out a solution on the real-time monitoring of gas consumption by EGs.</p>

2.8 Non-Frequency Responsive (NFR) Cap

34	Tuas	<p>Tuas Power Generation recognises the need for a cap on the NFR plants as well as the desirability of a market-based mechanism over an absolute cap.</p>	<p>We note Tuas Power's comment.</p>
35	Senoko	<p>Given that the proposed mechanism would be a "security constraint" applied in the MCE it is appropriate for the RCP and its Technical Working Group to consider this proposal as part of the normal rule change process.</p>	<p>Once the decision on the proposed gross bidding is made, EMA will direct EMC to make the necessary market rule modifications to achieve the policy objective. EMC would through its regular process, publish the market rule changes on its website where the market participants can provide their comments.</p>
36	Shell	<p>Shell would like to reinforce our objection on the EMA's Non-Frequency Responsive Generation Cap Proposal.</p> <p>EMA has clarified that the proposed concept of Non-Frequency Responsive Generation Cap will apply retroactively on those embedded generators who have applied for generation licence prior to the implementation of the new policies. This means that our current Shell Bukom Ethylene Cracker Complex – Stream Turbine Generator (STG) will be affected by the policies implemented under this policy review.</p>	<p>We have assessed the industry's feedback and note that a market mechanism could create uncertainty for new investors. Since there is still some margin in the NFR limit, we will not introduce a market mechanism at this time. The current first-come-first-served scheme of allocating NFR capacity will remain while EMA continue to explore other options.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
		<p>Shell opposes to EMA's proposed change to allow PSO to back off EG's must-run generation quantities because our STG has already been invested and built and has not been designed to cater for situations to be backed-off. The STG's generation level is closely linked to the efficiency of the new Ethylene Cracker Complex and hence, any unplanned adjustment to the STG's generation level will result in sub-optimal running of the ethylene cracker and it's associated consequential effects, leading to significant economic losses.</p>	
37	SIEC	<p>SIEC is not supportive of an arbitrary cap on the generation capacity of embedded generation in the NEMS. In the information paper issued by the EMA on 21st August 2006 titled "Net Treatment of Embedded Generators" the EMA stated that a system capacity limit on new embedded generation capacity, initially set at 500 MW, would be introduced and periodically reviewed.⁸ SIEC's understanding of this cap, consistent with the information paper, is that the cap only applies to embedded generators that are non-frequency responsive and not to non-frequency responsive generators that are not embedded. Generator criteria aside, SIEC understands, from dialogue with the PSO during the Briefing that an NFR Cap has now been introduced and an arbitrary level of 500 MW has been set. SIEC's view is that the establishment of this NFR Cap by the PSO has been unilateral without adequate consultation from our member companies. As a result, SIEC's members are unaware of the rationale behind the current NFR Cap and how it is intended to be administered going forward, absent any proposed changes. Furthermore, we understand that the proposal to replace the 500 MW cap with a mechanism to 'back off' NFR generators, contrary to what is stated in the Consultation Paper, is intended to go beyond system emergencies. SIEC's position is that the EMA's view on this issue is too simplistic in regard to the practicality of backing off the power output from embedded CHP facilities as a number of fundamental technical and commercial factors have been overlooked. These include, but, are not limited to the following:</p>	<p>The 500MW limit set in 2006 was for new embedded NFR generators. The NFR limit was not arbitrary set and was determined based on engineering studies.</p> <p>The statement from EMA's Statement of Opportunity 2009 on embedded generation treatment is extracted below for easy reference:</p> <p><u>"System Limit on Embedded Generation Capacity</u> Embedded generation plants are usually non-frequency responsive (NFR), i.e. their plant control system does not vary the plant's output in response to changes in system frequency, and therefore cannot provide reserves. As such, the EMA has set a system limit on embedded generation to safeguard system security. This limit will be reviewed periodically by the EMA. Companies planning to install embedded generation can contact EMA for further details."</p> <p>We have assessed the industry's feedback and note that a market mechanism could create uncertainty for new investors. Since there is still some margin in the NFR limit, we will not introduce a market mechanism at this time. The current first-come-first-served scheme of allocating NFR capacity will remain while EMA continue to explore other options.</p>

⁸ This document is available for download from the EMA's website at http://www.ema.gov.sg/media/files/info_papers/210806/UPLOAD_20061122112747.pdf.

No	Company	Feedback on Consultation Paper	EMA's Response
		<ul style="list-style-type: none"> <li data-bbox="415 224 1171 678">• The production of carefully planned amounts of both steam and power, all day every day, is an essential element of successful refinery and petrochemical complex operations. The steam operation is a dynamic process requiring constant monitoring and management and it is unreasonable for an embedded CHP serving its own steam and power load to be obliged to back-off production regardless of the condition of the power system. Backing off the power generation output will require a redundant means of producing steam to be maintained as stand-by so that the steam load can be supplied without interruption and not compromise the integrity of the integrated industrial complex. This will result in increased costs while no commercial compensation scheme to keep the load cost neutral has been proposed. <li data-bbox="415 716 1171 1230">• It is apparent that the scheme proposed to address a perceived overabundance of NFR power is based on the embedded CHP generator's loads remaining constant during any forced reduction in generation output. This is unlikely to be the case. SIEC member companies, like all rational businesses, will react to mandated changes to minimize their negative impact, whether to reliable operation or costs. If forced reductions take place during periods when electricity prices are high, refining and petrochemical companies will take steps to minimize electricity use, whether by switching from electricity driven systems to steam driven systems where practical, reducing production, or by other means. Furthermore, a reduction in the Must Run Quantity of the specified facility will have knock on impacts on the steam production and may reduce the load of the facilities. Both of these potential outcomes will obviously negate the PSO's intended result. <li data-bbox="415 1268 1171 1409">• Backing off the generation output will require the load to purchase additional power from the NEMS as a net importer from the grid which may be at a higher cost while no commercial compensation scheme to keep the load cost neutral has been proposed. <li data-bbox="415 1446 1171 1498">• Backing off the generation output is the equivalent to providing ancillary services in the NEMS, however, it is 	

No	Company	Feedback on Consultation Paper	EMA's Response
		<p>imposed on the embedded CHP vs. a conscious choice made of their own free will, no compensation scheme for providing ancillary services (or the equivalent of ancillary services) has been proposed.</p> <p>SIEC has not been adequately convinced that a problem exists. We therefore request that the PSO and the EMC provide more information to industry in a transparent manner and further investigation and study be undertaken prior to considering any policy changes prematurely.</p> <p>SIEC recommends that the utilization of existing market mechanisms be revisited before other new schemes, such as that proposed in the Consultation Paper, are explored. As an example, this may include updating the amount of Regulation Reserve and/or Spinning Reserve (Primary Reserve, Secondary Reserve, and Contingency Reserve) that is scheduled in the NEMS. SIEC's view is that the existing market design for ancillary services, either those that trade in the spot market, or those services that are separately contracted are sufficient. The principal of the NEMS bringing willing providers together within an existing competitive framework is a superior solution.</p>	<p>Increasing the amount of reserve required would not help the situation as there is a technical limit for frequency responsive plants in providing reserves, i.e. if they are dispatched below minimum stable load level, they are unable to provide reserves.</p>
38	EMC	<p>(i) On the policy paper's statement in paragraph 2.8.1 "...to give PSO the power to 'back-off' EGs 'must run' generation quantities during system emergencies ...", EMC would like to ask whether this means there will be</p> <p>(a) a pre-applied security constraint, and (b) a standard NFR cap value and another emergency NFR cap value.</p> <p>(ii) With regards to paragraph 2.8.2, EMC's view is that applying the NFR administrative cap in the form of a security constraint is not a market mechanism. In using a system constraint, EMA should take note that it is always possible for a system constraint to be violated and in such a situation the NRF cap will be breached.</p> <p>In nodal pricing, there is always a possibility that negative prices will be discovered in the NFR unit node (e.g. when there is a line constraint) just like in any other nodes.</p> <p>EMC would like to point out that as an implementation</p>	<p>See comment to item 37 above.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
		<p>procedure, PSO will need to provide EMC with the NFR facilities to be grouped under the security constraint and the value to be capped at. We would like EMA's clarification on whether the NFR administrative cap value will be revised? If so, how frequent as EMC will need at least 2 business days to prepare and revise the value and constraint.</p> <p>(iii) With regards to paragraph 2.8.3, EMC's view is that the example describing the back-off mechanism is incorrect. The MCE does not determine how much to 'back-off' – from the MCE perspective, when a security constraint is applied to cap the NFR generation, the MCE will try to keep within this NFR generation cap. For example, assuming Unit A, B, C and D are grouped under the NFR cap security constraint which is set at 200 MW. If Unit A offers 5 MW, Unit B offers 3 MW, Unit C offers 200 MW and Unit D offers 50 MW, the MCE will optimize such that the total NFR generation will not exceed the NFR cap security constraint of 200 MW. So, in this way, Unit A, B, C and D are backed off in the MCE optimization process. In such a scenario, EMC would like to ask how these NFR units will be scheduled. Though these units have the same offer prices – based on the location of these units, they will also have locational pricing meaning that there will be different losses experienced by each unit and they will be price discriminated accordingly by the MCE. However, in the case where two or more NFR units are in the same location (or electrically equivalent), a post processing tie-break model can be looked at to proportionately schedule these units.</p> <p>EMC notes that the proposal on the tie-breaking mechanism is subject to change – this could impact the overall implementation timeline. To set-up the proposed tie-breaking mechanism in the MCE, EMC will need PSO's advice to pre-define the NFR units that are electrically equivalent (or of the same location) upfront in the MCE.</p>	

2.9 Automatic Penalty Scheme

No	Company	Feedback on Consultation Paper	EMA's Response
39	NEA	<p>The proposed deviation differs from that stated in the current Market Rules and System Operation Manual.</p> <p>Proposed solution: Instead of the 10% deviation proposed, we suggest that EMA considers imposing an Automatic Penalty only if the actual metered energy deviates by more than ± 10 MW at the end of a dispatch period so as to be consistent with the current Market Rules and System Operation Manual. The proposal to impose an automatic penalty if the metered energy deviates by more than 10% of the scheduled energy is operationally very difficult for the incineration plants to achieve as they are burning refuse as an essential service. Refuse has a very wide fluctuating range of Net Caloric Value (NCV) which is something not within the control of the plants. The fluctuating range of refuse NCV makes it inherently difficult for the incineration plants to maintain their energy output within a narrow 10% band. The currently permitted deviation of ± 10 MW would therefore be more operationally realistic and achievable.</p>	<p>We note NEA's feedback. The deviation tolerance to Dispatch Instruction would be set at ± 10 MW and the Dispatch Instruction would be applied to the total of both the 'must run' and export quantities.</p> <p>Currently, PSO issues non-compliance notices to market participant so long as its generating unit deviations from dispatch schedule by more than 10 MW is not a result of direction from PSO. This shall continue even with the proposed automatic penalty scheme.</p>
40	Keppel	<p>Please clarify if the automatic penalty scheme is exempted for GRFs during instances when they are not on Automatic Generator control (AGC), i.e. during startups.</p>	<p>The penalty value will be changed to 2 times the market clearing price for energy, with a minimum penalty of \$5,000 per incident, i.e. Max (2 x (USEP + HEUC), \$5,000). The penalty will be applied when a GRF that is not on AGC deviates from its dispatch schedule by more than ± 10 MW regardless of the extent of deviation. Only those GRFs complying with PSO instructions to deviate from their dispatch schedule will be exempted from the automatic penalty. The MSCP could consider increasing the penalty amount on those who repeatedly deviate from dispatch schedule. The penalty collected will be refunded to the market through MEUC.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
41	Keppel	Please clarify the basis of licensing of EGs, i.e. is registration or licensing based on aggregated or per unit generation? This would affect the application of the automatic penalty scheme. Will the licensing regime be differentiated for EGs who export electricity versus those who do not?	<p>EMA has exempted generation companies (including EGs) with individual generating unit nameplate capacity of less than 10MW from the requirement to hold a licence to generate electricity, as such small gencos do not pose threats to power system security. They are however required to hold a Wholesaler (Generation) Licence that allows them to trade electricity in the market.</p> <p>Generation companies with aggregate capacity of 10MW or more are required to register with the EMC as Generation Registered Facilities (GRFs) while those with aggregate capacity of less than 10MW are required to register as Generation Settlement Facilities (GSFs). The proposed automatic penalty scheme applies to all GRFs that are not on Automatic Generator Control (AGC).</p>
42	Tuas	An automatic penalty scheme on all GRFs for deviations above the 10% threshold will fail to recognise the possible varied & valid reasons (startup/forced outages, system stress etc) for the deviations. However the need for a sufficient punitive deterrent for wilful deviations is also recognised. As such occurrences are rare, Tuas Power Generation suggest the penalty amount be spelt out front but determination of wilful deviations and imposition of the penalty continued to be assessed by the Market Surveillance & Compliance Panel (MSCP).	See response to item 40 above.
43	Seraya	The penalty mechanism proposed by EMA should be tweaked such that it is not applicable if the deviation is not the fault of the genco such as due to a forced outage or due to the startup and shutdown profile of our machines. When starting up, there are uncertainties as to when synchronisation can be achieved. This should also be taken into account. Otherwise, gencos would need to price in such risks with the possibility that the resulting rise in USEP may outweigh any reduction in MEUC due to the imposition of the penalties, to the detriment of consumers.	See response to item 40 above.

No	Company	Feedback on Consultation Paper	EMA's Response
44	Seraya	EMA to carefully define how scheduled energy would be computed for the purposes of calculating extent of deviation of metered energy from scheduled energy, taking into account that scheduled energy varies from period to period. As an example, say for period 1, the scheduled dispatch is 50MW but 100MW for period 2. Assuming a straight-line ramp up in period 2 from 50MW to 100MW in period 2 throughout the entire period, the generation facility would generate 75MW on average or 37.5MWh for the half-hour period. If the scheduled energy were calculated based on 100MW (translating to 50MWh), this would mean in a more than 10% deviation from the scheduled energy and the financial penalty would apply which is not intended to be the case. A more accurate calculation would take the period 1 scheduled energy of 50MW and period 2 of 100MW and use the average instead.	We will take into account Seraya's comment when we look into the computation of scheduled energy for the purposes of calculating the extent of deviation of metered energy from scheduled energy.
45	Seraya	The 10% deviation threshold is too low for large generation facilities when they are scheduled for small quantities of energy. The generation capacity of the generation facility should also be taken into account in determining the threshold.	The deviation tolerance to Dispatch Instruction would be set at ± 10 MW and the Dispatch Instruction would be applied to the total of both the 'must run' and export quantities.
46	Seraya	PSO has proposed modeling fault level contribution into the Market Clearing Engine (MCE). The proposal would mean that the MCE could limit the number of generators connected to the system to control fault level contributions. A generator that is not connected to the system cannot inject electricity. If the proposal is implemented, embedded generators should also be subject to MCE scheduling as to whether they can be connected to the system or not. If not, this would lead to inefficient outcomes where it is more efficient for an embedded generator to be disconnected than a non-embedded generator but as the embedded generator is not subject to MCE scheduling, the non-embedded generator is disconnected instead.	We note Seraya's comments and would take that into consideration in this current proposal as well as proposal on modeling fault level contribution.

No	Company	Feedback on Consultation Paper	EMA's Response
47	Senoko	<p>The Market Surveillance and Compliance Panel (MSCP) is tasked with monitoring and enforcing compliance with dispatch instructions. The MSCP has taken enforcement action related to breach of section 9.6.1 of Chapter 5 of the market rules in the past. Senoko considers that it is desirable for the MSCP to continue in this role because there may be bona fide reasons why there are deviations from the dispatch instructions (e.g., directions from the PSO or system disruption not attributable to the gencos). An automatic penalty scheme would not work well in such cases. Senoko prefers that the MSCP remain the arbiter on this issue, so that gencos can make representations and, when warranted, appropriate penalties can be imposed on the responsible party.</p>	See response to item 40 above.
48	IPC	<p>IPC understands that this scheme is not meant to penalize commercial generators. For example, during run-up and shut-down of the generating unit, the generating unit will be disconnected from the Automatic Generator Control when its load is below the minimum stable load. During this transient operation when the unit is not in a stable state, there can arise a situation when its dispatch may have to deviate from the schedule and the current 65 minute gate closure time may not allow the genco to make real-time change to the dispatch schedule. IPC wishes to seek clarification from EMA that it will not impose the automatic penalty on commercial generators for such situation.</p>	See response to item 40 above.
49	SempCorp	<p>It is proposing to automate a penalty scheme for all GRFs that are not on Automatic Generator Control (AGC). The consultation paper has clearly stated that it is a review of policy on embedded generators but the proposed scheme clearly impacts all other commercial generators due to its mode of operation e.g. ramping up and down of the machines. As such, we would like to request that commercial generators be excluded from the proposed penalty scheme (Para 2.9) as they are irrelevant to the policy in discussion.</p>	Should any penalty scheme be implemented for GRFs that are not on AGC, it should rightly be applied to all players regardless of whether they are EGs or not.

No	Company	Feedback on Consultation Paper	EMA's Response
50	SIEC	<p>SIEC recommends that the proposed Automatic Penalty Scheme be harmonized with existing provisions in the SOM, namely, Section 10.2.5 Excess Energy Generation and Section 10.2.6 Unable to Provide Adequate Energy, where the deviation tolerance to Dispatch Instruction is ± 10 MW. As the EMA has proposed an alternate tolerance of $\pm 10\%$ in the Consultation Paper, SIEC proposes that the deviation tolerance to Dispatch Instruction be set at the greater of a) ± 10 MW or b) $\pm 10\%$ of the Dispatch Instruction. For the avoidance of doubt, the $\pm 10\%$ of Dispatch Instruction would only apply to export quantities that are scheduled in the NEMS.</p> <p>SIEC recommends that the penalty value be linked to the price condition in the market at the time of the occurrence. It is recommended that the penalty be set at the prevailing $\frac{1}{2}$ hour spot energy price of $2 \times (\text{USEP} + \text{HEUC})$ and that it be returned to the market as a credit to both generators and load as both may potentially be impacted by any dispatch deviation.</p> <p>It is important to note that participation in the NEMS as an embedded CHP is not the core business function of SIEC's members. In recognition of the fact that NEMS participation is obligatory for embedded generating units, SIEC recommends that a 'No Harm No Foul' provision is introduced where, on a case by case basis, a deviation outside of the allowable tolerance, should it be deemed not to have an adverse impact on the power system, can be provided relief from the proposed Automatic Penalty Scheme. It is recommended that this proposed provision be administered by the Market Surveillance and Compliance Panel.</p>	<p>The deviation tolerance to Dispatch Instruction would be set at ± 10 MW and the Dispatch Instruction would be applied to the total of both the 'must run' and export quantities.</p> <p>The penalty value will be changed to 2 times the market clearing price for energy, with a minimum penalty of \$5,000 per incident, i.e. $\text{Max}(2 \times (\text{USEP} + \text{HEUC}), \\$5,000)$. The penalty will be applied when a GRF that is not on AGC deviates from its dispatch schedule by more than ± 10 MW regardless of the extent of deviation. Only those GRFs complying with PSO instructions to deviate from their dispatch schedule will be exempted from the automatic penalty. The MSCP could consider increasing the penalty amount on those who repeatedly deviate from dispatch schedule. The penalty collected will be refunded to the market through MEUC.</p>

No	Company	Feedback on Consultation Paper	EMA's Response
51	EMC	<p>EMC notes that the methodology for the Automatic Penalty Scheme is yet to be determined.</p> <p>(i) We would like to ask if there will be any exception to the Penalty being imposed on a generator, e.g., if the generator is being called for reserve. If there are exceptions, the policy paper should spell out precisely the exemptions and the clear conditions to qualify for each exception.</p> <p>(ii) For clarity, we would like EMA to state in the policy paper that IEQs - meter data from the final settlement statement will be used for the calculation of the 10% deviation and that these calculations will not be adjusted subsequently.</p> <p>(iii) We would like EMA to clarify whether automatic penalties are to be collected by EMC and refunded to the market through MEUC, as EMA had mentioned at the industry discussion on 4 Dec 2009. If so, these details should be spelled out in the final policy paper.</p>	<p>(i) See response to item 40 above.</p> <p>(ii) We will work out the implementation details with EMC when the policy changes have been finalized.</p> <p>(iii) The penalty collected will be refunded to the market through MEUC.</p>